VOLUME VI MAY, 1913 NO. 5

Southern Medical Journal

Journal of The Southern Medical Association

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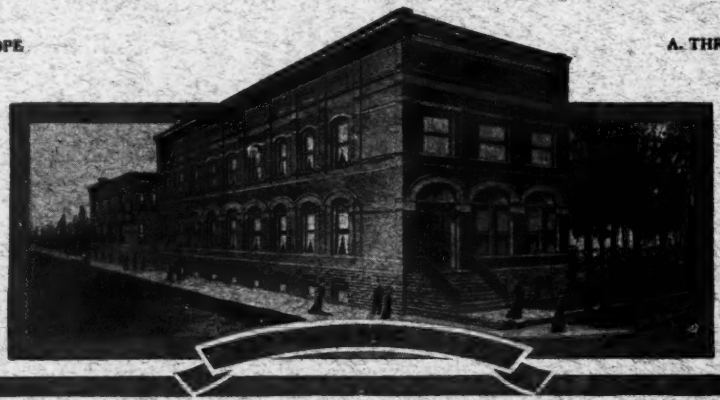

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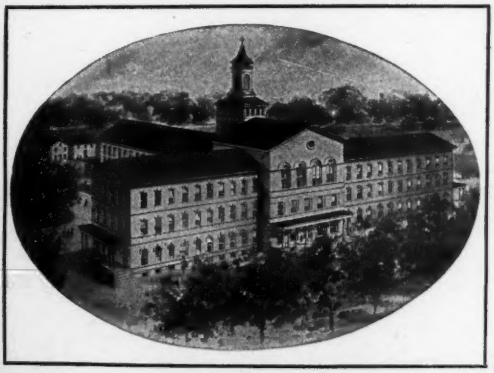

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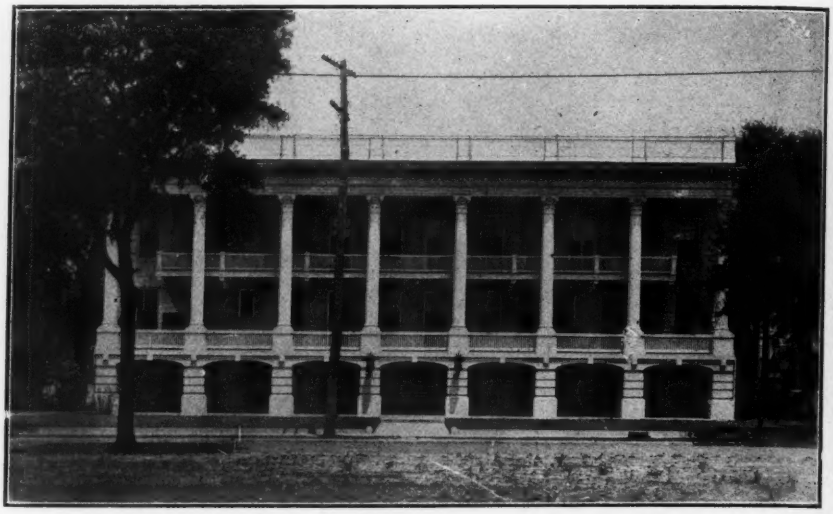

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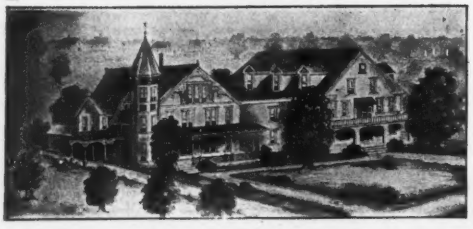

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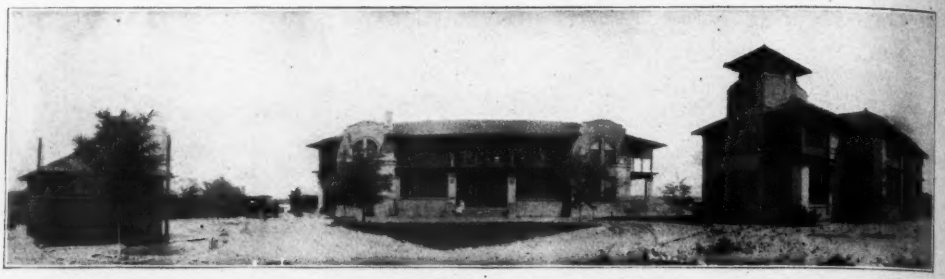

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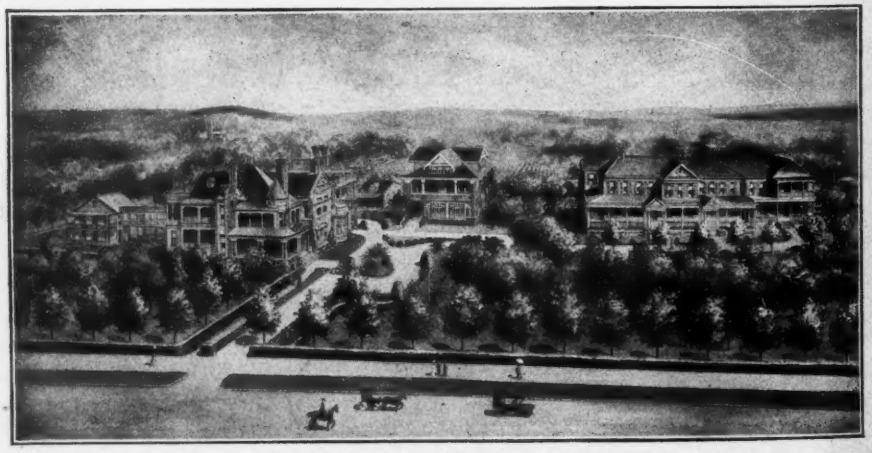

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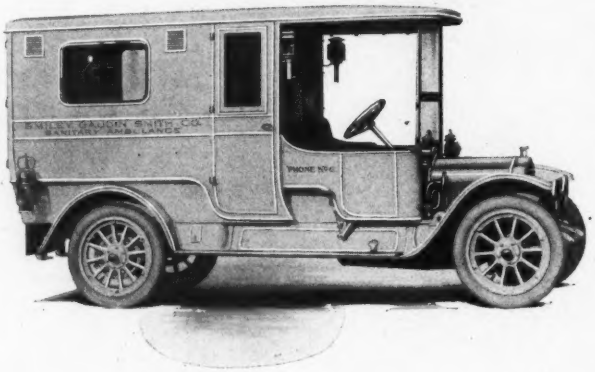

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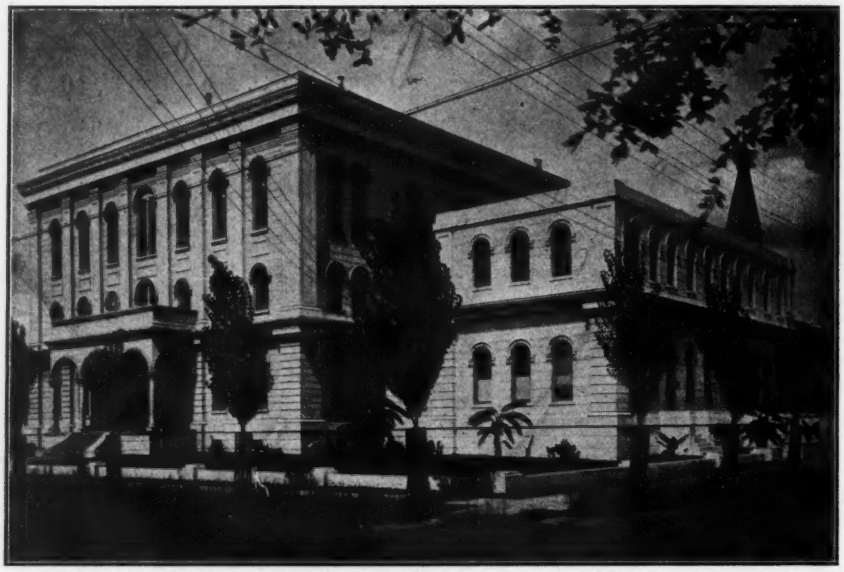

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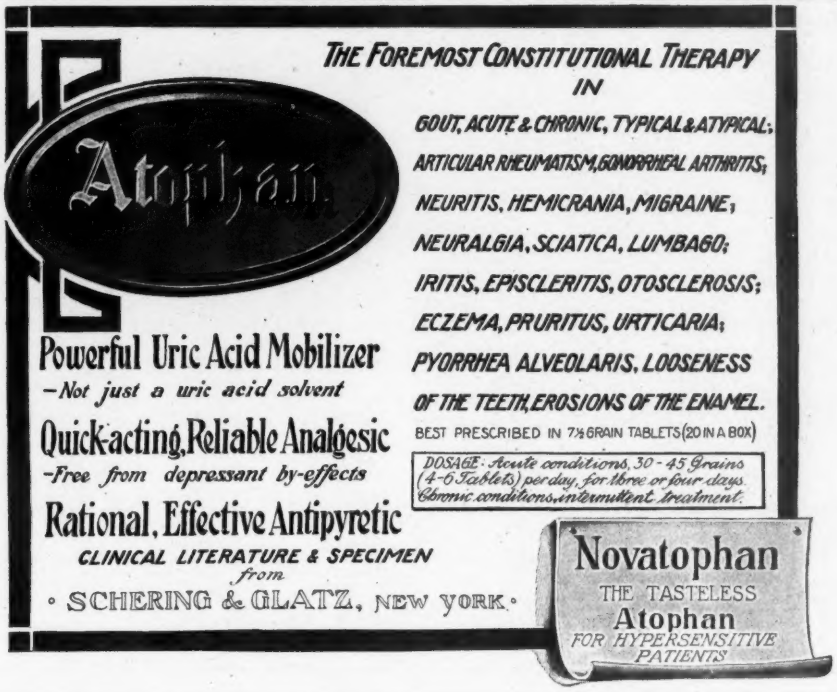
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SOUTHERN MEDICAL JOURNAL

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ORIGINAL ARTICLES

PUBLICITY AS A FACTOR IN SECURING AND ENFORCING ORDINANCES PROVIDING FOR THE CONTROL OF THE PRODUCTION AND SALE OF MILK.*

By V. H. Bassett,
City Bacteriologist, Savannah, Ga.

In making attempts to lessen the rate of incidence of typhoid fever it is of prime importance to secure and enforce good laws governing the production and sale of milk. Milk is a fluid medium, and therefore a limited infection of either a producer's supply or that of a consumer may extend, through infected utensils, to the whole supply of a producer and a large number of persons be infected at one time. The pollution of solid food, on the contrary, usually simultaneously infects only small groups of persons at one time, except perhaps in military encampments.

In Savannah we have a supply of artesian water of good sanitary quality, which is carried into almost every single dwelling. The system of drainage and sewerage is quite complete, and provision has been made to extend house drainage until the entire city has the service. Our housing conditions are well known to be good, much better than the average. Our sanitary laws are well enforced. As a result, we have a low typhoid death rate. A considerable number of the deaths occurring in the city result from infections incurred outside of the city limits. Our experience in this regard is probably not unlike that of other communities. This good record is marred by the occurrence, within recent years, of two epidemics of typhoid fever, in each of which the infection was caused by a polluted milk supply. For this reason we have passed, and are enforcing, stringent laws governing the production and sale of milk. A short account of some of the methods used in securing and enforcing these laws may be of interest.

*Read at the Sixth Annual Meeting of the Southern Medical Association, Jacksonville, Fla., November 12-14, 1912.

This brief communication does not deal with these admirable general methods of publicity or education which have as their object the increase of the general knowledge of a people in regard to sanitation and hygiene. We have numerous agencies, other than our schools, for this purpose. Such work has become an important function of all the agencies, national, state and municipal, devoted to the conservation of public health. It is here attempted only to deal with those specific methods of publicity which directly prepare the way for the securing of an efficient law and which aid in enforcing it.

As soon as it is proposed to place sanitary restrictions on any line of business, its advocates arise and object to the increased expenditures involved. They are represented by shrewd counsel. Their objections are seconded by the cries of those unthinking individuals who regard all restrictions, and especially those made in the interests of public health, as a menace to personal liberty. In the background hovers the calculating and time-serving politician, ready to take any advantage and sacrifice any interest to secure his own selfish end. Those who attempt the difficult task of securing and enforcing restrictive laws in the interests of public health must therefore be prepared with arguments to meet these antagonists. They must fortify themselves by educating the public, through publication of the facts, thus preparing the way, not only for the passage of the law, but also for its enforcement.

In order to prevent the spread of infection by means of milk, the production and sale of milk must be removed from close contact with household life. On the **farm** the work of the dairy must be carried on in the **milk-house** and not in the **kitchen** in close contact with family life. In the **city** the small dairy **in close proximity to dwellings,** in crowded portions of the community, must be **eliminated.** It is impossible to depend upon such dairies for the production of clean milk. **Milk depots** must be established for the **sale** of milk, which should not be allowed to be sold from any building occupied in part as a residence.

The attempt to institute such radical though

necessary changes was certain to arouse a considerable opposition. The following methods of publicity were used in forestalling and meeting such opposition:

(a) Publicity through the medium of the County Medical Society.

The ordinance as prepared was presented to the County Medical Society, and read and discussed by sections. Some changes were suggested and made. The modified ordinance was then endorsed by the society and a committee appointed to appear before the City Council in open meeting and urge its passage and enforcement. The action of the society became a matter of public knowledge. The arguments of the members of the committee, in answer to those opposing the passage of the law, were also published in the press of the city. The physicians, individually and as a body, became advocates of the proposed ordinance. It is impossible to overestimate the value of such support.

(b) Publication of photographs and notes of inspection in the press.

Many of the conditions which it was desired to correct were so objectionable that they were to be uniformly condemned as soon as seen. Persons who at first objected to the ordinance became its supporters as soon as they observed the conditions in the small dairies in crowded portions of the city. Since it was impossible to have all the interested parties see the dirty conditions existing, photographs were taken by the inspectors and these conditions brought to public notice by the publication of the photographs in the press. This was done on order of the Mayor and Board of Sanitary Commissioners. Some of the pictures needed no comment. Others served as a text for a printed lesson or for an editorial. The influence of this form of publicity is of great value in overcoming opposition.

Our ordinances relating to the control of the production and sale of milk were finally passed without much opposition. The following provisions of the law are worthy of note:

1. The law provides that no dairy be licensed which is located within fifty feet of any dwelling, privy, water closet, or garbage receptacle. This provision eliminates the dairies in crowded parts of the city.

2. Milk cannot be produced, handled or sold in any building occupied in part as a dwelling for human beings.

3. A chemical and a bacteriological standard is established for milk and cream, and penalties provided for the sale of adulterated milk and of dirty milk.

4. Provision is made for the legal control of pasteurization of milk, and for the legal control of the production and sale of certified milk.

5. Provision is made for the punishment of violations of the law by means of fines. In addition, the Board of Sanitary Commisioners is given power to revoke the licenses of chronic offenders.

6. Provision is made for adequate inspections, for the use of the score card, and for adequate laboratory control of the inspections.

The efficient enforcement of a stringent ordinance providing for the control of the sale of milk is a matter of difficulty. It requires patient and intelligent work on the part of the inspector; it requires a laborious laboratory control; it requires a firm and determined executive, who can distinguish between dishonest trifling and honest endeavor, and who will resolutely cut off the chronic offender who is menacing the health of the community.

The work of all these officers is aided and upheld by publicity. The score cards of the inspectors should be published as a basis for the sanitary rating of the dairies. The laboratory records should be published to indicate the quality of the milk offered for sale by the various dairies and milk depots. At present we publish in the press, by direction of the City Council and under authority of the Board of Sanitary Commissioners, weekly records of laboratory inspections. In addition to the analytical data, a statement is appended indicating the quality of the milk supplied by the individual dairies. This publication is a free advertisement for the good dairyman. It serves as a warning to the consumers of the milk produced by the careless or dishonest man. These reports form the basis, together with the inspectors' reports, for action taken by the board in revoking the licenses of chronic offenders.

As a means of preventing infection, laws, even when rigidly enforced, are not perfect. The work of the inspectors can prevent infection only by providing a high standard of conduct for the dairyman and by warning him against mistakes which might otherwise easily be made. The laboratory examination of milk will not prevent infection. It only aids the work of the inspectors by discovering violations of the law not to be determined by inspection. The deterrent action of the punishment of the careless and dishonest man must also be depended upon to prevent milk-borne epidemics. Fines are usually too small an amount to have a marked deterrent action. The product of one liberal watering of a day's supply will often bal-

ance the account which has been depleted by a small fine. Repeated offences should be punished by heavy fines, but it is difficult to secure such fines. We depend, therefore, upon the revocation of the license of a chronic offender, a heavy financial penalty, and which results not only in the **elimination** of the dishonest man, but also has a marked **deterrent** effect on the actions of the careless man. These measures have received public support, since by publicity their necessity is recognized.

REMARKS ON MASSAGE.

By Curran Pope, M.D.,
Louisville, Ky.

Medical Superintendent "The Pope Sanatorium," Etc.

There is a prevalent belief among the uninitiated of medicine that manual massage is a very complex subject, difficult of acquisition and application. This is far from the truth, which as usual lies in the midroad between. Most physicians could easily acquire the necessary technique of the average operator who "gives massage." The essential element, the one necessary fundamental for its rational and proper adaptation to the case in hand, is a medical one; that is, an intimate knowledge not only of the disease or disorder for which it may or may not be used, but an accurate understanding of the patient's **actual condition.** This art might escape much ignomy if medical men knew sufficient to employ or prescribe it with the same intelligence that they give to the medicinal prescription. That an ignorant individual of either sex is usually permitted to "put the patient through the paces" of a massage treatment seems curious, and the failure of this agent in many instances can doubtless be laid to the fact that, square or round, the peg is driven through the same hole. It is a hit or miss proposition. A physician who employs this valuable agent in his practice will more fully appreciate an operator's ability and technic if he himself is capable of administering the treatment. Personal experience will educate his touch and widen his judgment. Physicians who educate themselves in this line will find many conditions of tissue not usually spoken of in text-books. Manipulation will become an aid to diagnosis of **conditions** of the structures of the human, although it may not be necessary to make a "tag" diagnosis. The acquisition of the art is not difficult. A physician can best learn "how" by being taught the proper movements by some **competent operator.** With these as a starter, with his knowledge of physiology and pathology, he should soon be able to adapt his measures to the case in hand. Most busy physicians cannot give general massage treatments because of the time involved. Many localized conditions can be met and overcome by a few minutes of judicious massage. The more a physician employs this method in localized conditions, the better will he be satisfied with his results. For example: A man falls and injures his wrist, a supposed fracture, which the Roentgen ray negatives. It is very painful, stiff, swollen and angry-looking. A preliminary heating to relax the parts, followed by gentle massage and joint manipulation, results in an immediate relief of suffering. Seven treatments in as many days bring about a restoration of function and an integrity of tissue. This result far exceeds a three or four weeks' plaster of Paris dressing, with loss of time and subsequent stiffness. The soothing and comforting effects of massage are at once apparent. The masseur or masseuse must be industrious, observant, painstaking and conscientious, reporting truthfully to the physician, following his instructions closely and adhering loyally to his interests. Few, indeed, fill the entire bill. I am much opposed to levity or loud talking in an operator. To be acceptable to the patient, the operator must be scrupulously neat, quiet in dress and manner, and as far as possible pleasing in his or her personality. A rather long, soft and pliant hand, good or vigorous health, an ample margin of physical force are useful to operators, though not absolutely necessary. A cold hand is an abomination, and if constantly present, is a bar to the success of the individual. Education and refinement are always sure to bring greater success than the lack of these qualities, and my experience has been that the educated acquire the manual dexterity of massage with more rapidity than the ignorant. Physicians, in recommending operators, should bear in mind that the kitchen, laundry and stable are not prerequisites nor qualifications for success. Many physicians do not know the terms applied to the operators, male and female, and it may not be amiss to state that **Massage** is a form of treatment by rubbing, stroking, and kneading of the human body. The male operator is known as a **Masseur,** the female operator is known as a **Masseuse,** and the patient receiving the treatment is **massed,** not "massaged." As a rule, the profession, as well as the laity, have considerable distrust concerning operators, and this is no doubt due to a pernicious practice of taking massage without

medical supervision. It is through very indifferent operators out of employment, whose pecuniary necessities lead them to make extravagant statements and promises as to what can be accomplished through the use of this valuable agent, that discredit has at times been heaped upon it. The application of this remedy to disease presupposes a thorough knowledge of the disease and its pathology.

The movements of Massage are of four kinds:

1. **Effleurage,** or stroking, the stroking being performed with the flat palmar surface or heel of the hand. The stroke is always toward the body or center, and the return stroke, which is rather more rapid, should just graze the skin. It is claimed that the main advantage from effleurage is its emptying action upon the veins and lymphatics, thereby hastening circulation. It also influences and stimulates the sensory nerves of the skin.

2. **Petrissage,** or kneading, is by far the most important of the four movements described. It must be performed by the hand grasping the tissues lightly, and lifting them, making energetic strokes with one hand and a circular, or to and fro, movement with the other, alternately tightening and relaxing the tissues grasped. Great care should be exercised that the skin moves over the muscles, and that during the manipulations the hand does not pull the surface hairs so as to produce pain. Where the conditions are like they are in the calf of the leg and forearm, the hands may be placed on either side of the extremity and the tissues alternately pressed and relaxed by making pressure against the bones. The action of petrissage is the main action, in my opinion, of general manual massage, when used as a therapeutic agent.

3. **Friction** is another method, and is performed by firm rubbing with the whole hand or finger tips, mostly in circles. It is more superficial than petrissage, though in its action is similar. In places where the tissue covering the various bony structures, notably around joints and the cranial bones, friction is then of use. For strains and effusions in and around joints it is very useful.

4. **Tapotement,** or tapping, is the name given to the method of tapping or striking the tissues with the ulnar side of the hands or the bent fingers. It is a powerful surface stimulant, and when the whole flat hand is used, the peripheral nerves are aroused. Such tapping or slapping favors reaction after cold hydro-therapeutic procedures. Writers have indulged in numberless divisions and subdivisions of these procedures, with all kinds of flourishes and curlicues superadded. They are much in vogue by certain Swedish operators, but space forbids mention. For practical and scientific purposes, the four fundamental procedures given above are sufficient.

Massage should never be given through the clothing. Much of its value is lost by this mode of application and the contact with the skin in **manual** massage is a requisite; this is not so with mechanical vibration. The operator who has to give general massage through clothing will be soon exhausted, as he will have to exert much more force.

There is absolutely nothing immodest or improper in massage, applied as it should be. Unguents, oils or vaseline are rarely needed, and in some instances are a positive detriment. As a rule, the proper application of massage does not require the use of oils and if the operator pinches the skin unless these are used, it is a sound rule that a change is needed, as you are dealing with an incompetent person.

Neurotic, nervous, hysterical, neurasthenic and peculiar patients must be handled with great care and gentleness at the outset. In these we may employ this cardinal rule, that "better much too little than a little too much." To be of real advantage, massage should be daily, though I believe that an intermission on the Sabbath Day will be of advantage in the long run. General massage for those taking the "rest cure" should last from twenty to sixty minutes. It is here that manual massage reaches its maximum value in its application to nervous diseases. The **immediate** effects of massage are decided. There is a quiet bouyancy, a feeling of increased warmth and gentle fatigue without soreness or exhaustion, a desire for quietude and rest. Sleep is frequently induced. If, however, the patient is tired, irritated, nervous, chilled and in bad temper, a change should at once be made. The quantity must be lessened, the application made lighter and the sequence of procedure changed. This belongs to the physician and any change ordered must be strictly followed. These effects are rare when we start with light treatments and carefully and gradually increase the duration and force. The ultimate and permanent results of massage are nutritional. Better blood, better color, better skin, better sleep, better elimination, freer action of the bowels and kidneys, increased metabolism, and a subsequent gain in flesh where this is sought. The muscles become filled and firmer; nervousness, irritability and other functional conditions are helped. This is probably brought about through the increased circulation of the blood, increased activity of the lymph stream, to-

gether with the manifold benefits arising from the reflected impressions upon the superficial sensory nerve terminations in the skin and muscles. It is astonishing how quickly massage will remove fatigue—a fact, according to Beard, well known to the Sandwich islanders, who practice lomi-lomi upon one another when much exhausted.

The powerful influence exerted on nutrition, circulation and excretion make its proper performance one of the necessities of the so-called **"rest cure."** Mitchell properly insists that its careful and thorough performance is essential to success. It is one of the most important of the mechanical aids in this form of rest treatment. It should be given as general massage, with certain variations to meet the special requirements of each case. In no class of cases except such as those taking the rest cure do we find abdominal massage so strongly demanded. Upon its proper application the patient's ability to ingest, digest and assimilate large quantities of food is dependent. We should seek in these cases a healthy increase of flesh, and should fat accumulate too rapidly it is usually an evidence of poorly or insufficiently performed massage, as is the presence of large quantities of urates in the urine. It may be employed with good success as an adjuvant in ambulatory cases of neurasthenia, hysteria and the so-called functional neuroses and psychoses. The most commonly employed method is **"general massage."** Here the operator applies the various movements to the entire body in regular sequence. The method commences usually with the lower limbs, then the upper extremities are treated. Operators vary in the sequence of the various movements, the most frequent order being the effleurage, petrissage and friction, the length and strength of the treatment depending on the case in hand. **One part** of an extremity is treated at a time, covered or protected to prevent chilling. From the extremities proceed to the spine and back. These structures bear relatively heavy treatment, especially effleurage, the treatment being usually finished with tapotement. Of late years some operators substitute vibration for this division of massage. Next the chest, avoiding the mammary glands in females, and finally the abdomen. Place a pillow under the patient's head, the lower limbs drawn well up; that is, bent at the knee and semi-flexed, complete relaxation of the abdominal muscles being sought. With the hands **quite warm,** commence with gentle friction, in small circles, then deeper kneading in wider circles around the navel as a center. Especial attention must be paid to the colon, commencing at the caput and following same to the sigmoid. Deep kneading is very effective in this region of the body. Tapotement or vibration over liver and spleen finishes the treatment. A warm **garment de nuit** is now slipped on, the patient warmly covered, and, if deemed necessary, a hot glass of milk is given. Rest for an hour is the rule. There is nothing known to medicine (in my opinion) that takes the place of massage for those who cannot take exercise or are in such condition as to make exertion detrimental or dangerous. As a preliminary or preparatory measure to the Nauheim or oxygen bath, manual or mechanical massage is a most valuable agent. In **sciatica** (not sciatic neuritis), the writer has been in the habit of using massage (principally mechanical), following its use by very heavy static sparks drawn from the spine and **both** sciatic nerves. His results have been unusually satisfactory, patients having been able to get about in six to ten days and resume their work within a fortnight.

In **locomotor ataxia,** and some other organic spinal lesions, unequivocal praise must be given to rest and massage, especially at the commencement of the treatment. It will lessen the pains and ataxia, and increase the strength and nutrition of the patient. While confined to bed the patient can once or twice or oftener during the day use the bed exercises as pointed out by Fraenkel. In many **cerebral palsies** the addition of massage to the other well recognized forms of treatment will be found productive of good, especially if its use is preceded or followed by "resistive" exercises adapted to the case in hand. In **diabetes** it is helpful, especially after the use of cold or tonic hydro-therapy. Care must be exercised to keep down acidosis, as this combination of therapy seems to be especially productive of hyperacidity at the beginning of treatment.

In rheumatism, gout and similar diseases it fulfills a useful purpose and is a decided aid to any other form of medication, as it not alone affects the disease process, but makes medicinal remedies more effective, through its circulatory and other effects upon the system.

In localized conditions of trauma; wrenches, sprains, myositis, etc.; in localized inflammations of all kinds, save infective, it will, of itself perfect a cure of the condition, be it one that is curable. When conditions are severely acute, its application should be preceded by the use of the 500 candle power incandescent lamp, the treatment being largely that of effleurage, not sufficiently strong to produce pain. In chronic localized troubles, vigorous massage, followed by passive motions and the static wave current to the affected area, will be found almost a panacea for conditions

that do not yield readily to ordinary methods of therapeutics.

When the principles underlying the art are well understood, it will be found to have a wide application. Results will be obtained in proportion to the correct diagnosis of the disease and tissue state.

It is to be regretted that physicians do not master this method of treatment. Even the busiest can devote a few minutes to the treatment of localized lesions. It will be educative to touch and knowledge, and the results obtained will more than justify the time expended. General massage had best be relegated to competent **masseurs** and **masseuses** who are willing to follow out the physician's directions. Occasional supervision in person of the work will prove a stimulus to the accuracy and care of the operator employed.

In conclusion, it may be said, with regret, that this valuable agent is too little employed. It is to be hoped that the modern trend from **exclusive** drug medication toward hygienic, dietetic and physio-therapeutic remedies will cause many physicians to enlighten themselves upon this method of treatment and include it in their therapeutic armament.

115 West Chestnut Street.

THE ROENTGEN DIAGNOSIS OF INTRA-THORACIC LESIONS.*

By A. L. Gray, M.D.,
Richmond, Va.

I am aware of the fact that the subject of my remarks has, in many instances, an inevitable surgical aspect, but since these cases, almost without exception, are first seen by the internist or the general practitioner, it is upon him that the patient relies for the diagnosis, and often also for treatment. By far the great majority of "Chest Cases" that come into the hands of the Roentgenologist are referred on a suspicion of tuberculosis. The value of a Roentgen examination for the detection of the earliest tuberculous lesions is already established, and is so extensive a subject that I shall avoid it, except by way of differentiating tuberculous involvement from other pathological conditions within the thorax. In the slides that will be shown you will be demonstrated the diagnostic points.

SLIDES.

1. A normal chest, except for a few old, calcified tubercules. This plate is one of a stereoscopic pair taken on account of suspected tuberculosis. Each plate was exposed for less than one-half second, and each one caught the heart still, in the same phase of its cycle.

2. A slide of moderate tuberculous infection, chiefly of left upper lobe.

3. A typical picture of general miliary involvement of both lungs, which, however, proved to be primary lymphangio-sarcomatosis. This rare condition so strongly simulates miliary tuberculosis that the clinical picture should always be added to the Roentgen findings before a definite diagnosis is made.

4. Next in frequency to pulmonary tuberculosis, we are asked to determine the presence of pleurisy with effusion. The slide shows free fluid in right pleural cavity and extensive tubercular consolidation of left.

5. Localized, walled-off effusion.

6. Pleural thickening without fluid.

7. Thickened pleura by adhesion and contraction often causes displacement of the thoracic viscera. Retraction of diaphragm is very noticeable here.

8. Hodgkin's disease. Hydrothorax, probably from pressure of a large gland, seen faintly through fluid.

9. Plate illustrates differential diagnosis between pericarditis with effusion and pleural effusion. Note normal contour of right side of heart.

10. Purulent pleurisy or empyema cannot be distinguished from non-purulent effusion except by considering clinical picture. Localized empyema.

11. Appearance following evacuation of pus. Drainage tubes *in situ*. Note pneumo-thorax.

12. Abscess from infected ribs, bulging into the pleural cavity and compressing the lung.

13. Thickened pleura over upper lobe, right lung. A circular, dense area, seen through the pleural shadow, is probably an abscess.

14. Mediastinitis probably secondary to aortitis, with dilatation of the aortic arch and descending aorta, as well as the entire heart.

15. Aneurism of aortic arch and innominate artery.

16. Aneurism left common carotid, arch of aorta and descending aorta.

17. Dilated right auricle and aortic arch.

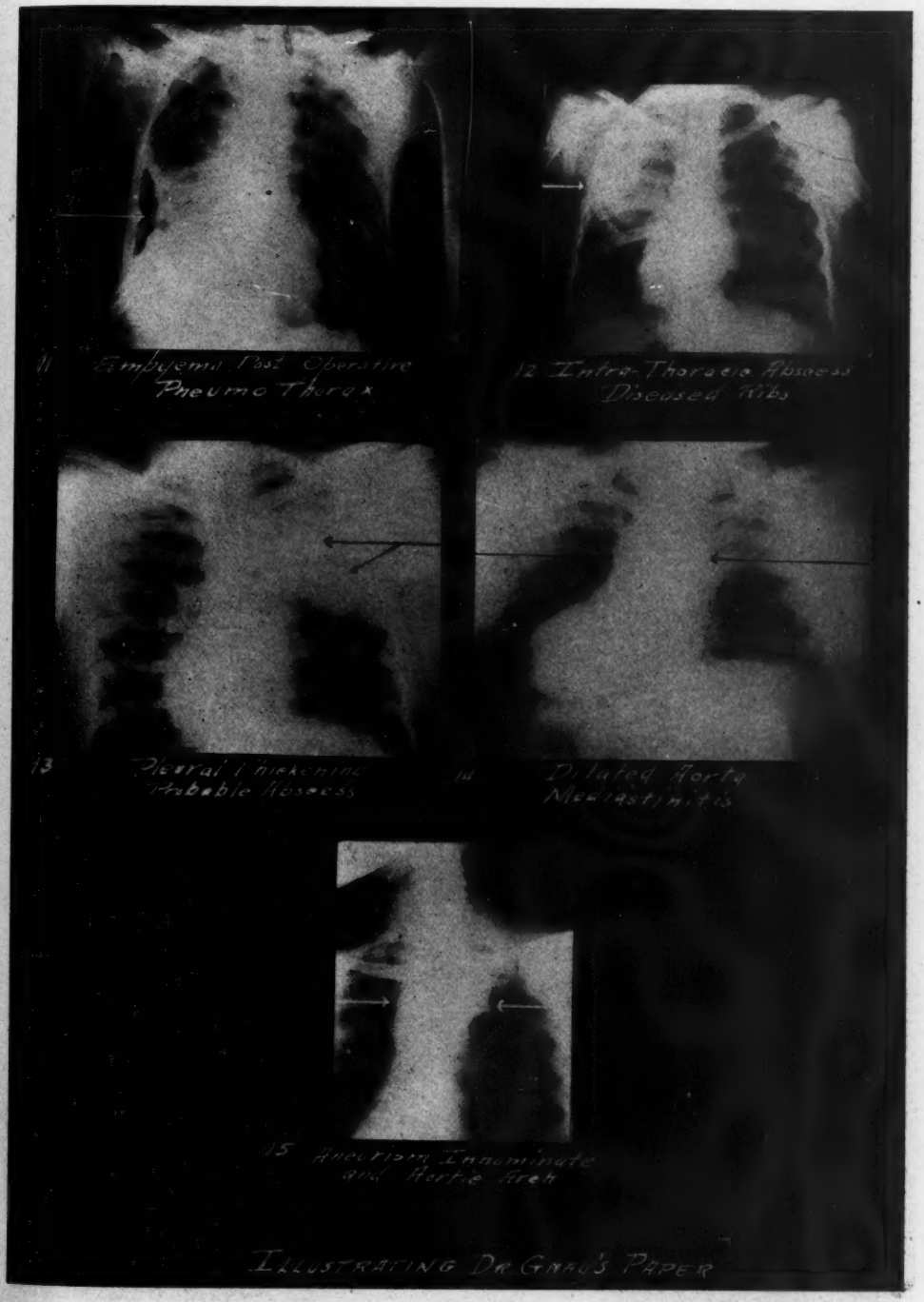
18. Displaced aortic arch, Arteriosclerosis, Cause of displacement not ascertained.

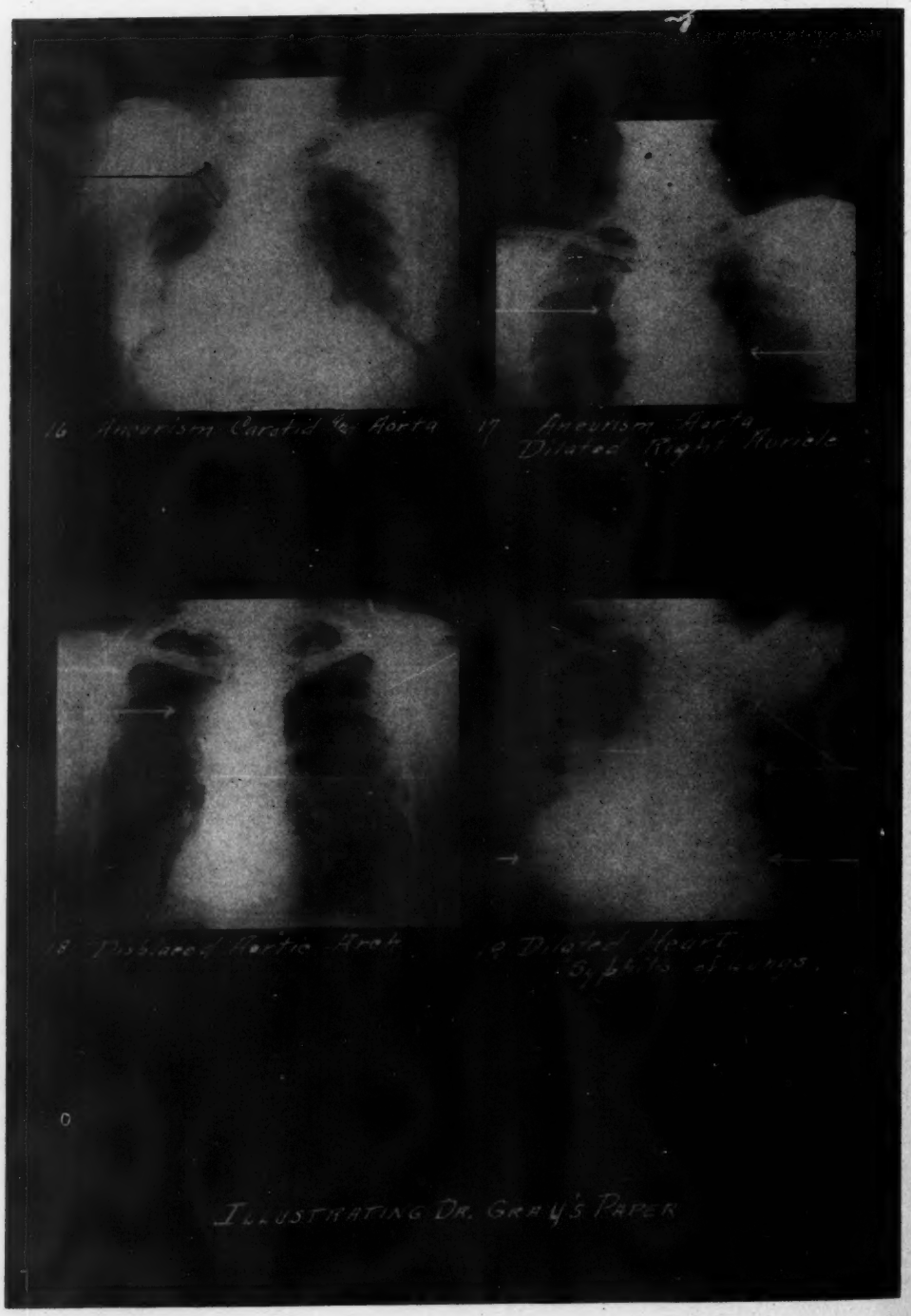
19. Syphilis of both lungs. Verified by a Wasserman test. Dilated heart and aorta. Note absence of calcified tubercles or single isolated tubercles. Areas of consolidation extend into lungs from roots and form comparatively large areas of consolidation, apparently not made up by the coalition of tubercles.

*Read before the sixth annual meeting of the Southern Medical Association, Jacksonville, Fla., November 12-14, 1912.

2. Tuberculosis Moderate Involvement
3. Lymphangeio Sarcoma
4. Tuberculosis Pleural Effusion
5. Tuberculor Pleurisy
Encysted Effusion
ILLUSTRATING Dr GRAY'S PAPER

6 Thickened Pleura
7 Thickened Pleura Retracting Diaphragm
8 Hodgkin's Disease Effusion Enlarged Gland
9 Differentiating Pleural Effusion from Pericardial Effusion
10 Encapsulated Empyema
Illustrating Dr Gray's Paper


11 Emphysema Post Operative Pneumo Thorax
12 Intra-Thoracic Abscess Diseased Ribs
13 Pleural Thickening Probable Abscess
14 Dilated Aorta Mediastinitis
15 Aneurism Innominate and Aortic Arch
Illustrating Dr Gray's Paper


16 Aneurism Carotid & Aorta
17 Aneurism Aorta
Dilated Right Ventricle
18 Dilated Aortic Arch
19 Dilated Heart
Effects of Lues
ILLUSTRATING DR. GRAY'S PAPER

PHTHISIOGENESIS.*

By Dr. E. C. Thrash,
Atlanta, Ga.

This essay, in some respects, will be a departure from the beaten paths followed by a majority of phthisiologists for the past three decades, but it is based upon a number of years of experience and the handling of hundreds of cases of tuberculosis. Inhalation of particles of infected sputum, either moist or dry, which pass into the bronchi and find lodgment there, is considered by a majority of the medical profession as the dominant factor in the production of pulmonary tuberculosis. This may be one, but, if so, it is by no means the dominant cause. Tubercle bacilli may reach the lungs in three ways—through the air passages (aerogenous), through the lymphatics (lymphogenous), or through the blood (haematogenous). We will discuss these in their turn.

Experimentation has shown that not less than fifteen to twenty tubercle bacilli in a group will grow and produce a tubercle in the guinea pig, which is much less resistant to this infection than man; so it will certainly require no less than this number placed together and fixed at a certain point under the most favorable circumstances in order that they may root themselves upon the mucosa of the lungs and form a tubercle. This process requires from three to four weeks, during which time these organisms, when they reach the bronchial tubes, are constantly acted upon by the cilia, which wave all extraneous matter toward the pharynx, from whence it is thrown out. In addition to this, these germs are bathed in the body fluids which are themselves germicidal, and they are also attacked by the wandering phagocytic cells that pass up between the epithelia to defend their host from this arch enemy. It is, no doubt, possible for them to get a hold despite such odds as these, and force nature to take the next step of defense, which is the elaboration of cells and cell products in the production of a tubercle; but this is certainly exceptional and not the rule. When this does occur it can be possible only when one is either thrown constantly and intimately in contact with a tubercular person day in and day out for many weeks, or remains for a long period of time where the germs are circulating freely in the atmosphere in large numbers, as living in a room where a careless consumptive has lived and expectorated promiscuously, or be daily in a place of business where careless consumptives keep the air swarming continuously with live tubercle bacilli.

It is doubtful whether the periodical breathing in of small numbers of tubercle bacilli, as by sleeping in a bed one time with a tuberculous person, or where a tuberculous person has previously slept, or occasionally being thrown with an infected person, who is careful, in a social way, could possibly produce the disease.

Let us next consider the lymphogenous method of dissemination. Tubercle bacilli suspended in water and injected into the rectum of an animal in large quantities will not be taken up by the villi, but will be ejected without producing harm. If they are mixed with cream and injected they will pass into the lacteals in large numbers, infecting the glands and other organs. This shows that these bacteria do not pass through the intestinal mucosa unless they are incorporated in emulsified or saponified fats, in which state they can enter only through the lymphatics, through which they may pass unmolested into the circulating blood or lodge in the lymph glands. This accords with my clinical and autopsy experience, as a number of infants, upon which I have held autopsies at Grady Hospital, dying with the diagnosis of marasmus, were found to have general tubercle mesenteric adenitis, which very probably resulted from infected milk, either human or bovine. Also, in my work at the Anti-Tuberculosis Clinic of Atlanta, I have found almost every child of tuberculous mothers would show the positive Moro and Von Pirquet, and most of them were suffering from cervical tubercular adenitis.

I shall endeavor to show that this is the source from which the so-called inherited phthisis comes, and no doubt from which most adult pulmonary tuberculosis develops. The seeds are planted in the lymph glands of the child from nursing, kissing, or eating from the hands of an infected mother, father or nurse, or from drinking infected cow's milk. These seeds are ultimately carried to the lungs in a manner that will be explained when haematogenous dissemination is considered.

It is a common opinion among the medical profession that the predisposition to tuberculosis is inherited from tuberculous parentage. This is contrary to every law of immunity. When one contracts an infectious disease he begins immediately to build up immunizing bodies and defensive products to protect himself and to eradicate the poisons of this disease from his system, or he promptly dies. He is more or less immunized from the very beginning, and when the disease is

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completely eradicated he is enjoying, for the present, a complete immunity against that disease. If, during the progress of this immunizing process, the person has an offspring, this offspring would inherit the characteristics of the parent, and it follows that if this inheritance has any bearing upon tuberculosis it would certainly be toward immunity and not toward predisposition. This is borne out in my observation of having seen men from tuberculous families who would themselves have the disease, marry and bury more that one woman, and vice versa. There are many instances where people of tuberculous families who are suffering from tuberculosis without knowing it, transmit the disease to their wives or husbands, who develop an acute type and die quite promptly. Individuals who are supposed to have inherited a predisposition are those who have acquired the disease during infancy and childhood, the glands becoming infected and the infection remaining more or less dormant until the period of adolescence when resistance is at the lowest ebb, at which time they develop the pulmonary type of tuberculosis. The manner in which this takes place will be explained in the next paragraph.

Taking up now the haematogenous method of infection. I will state that most tubercular processes in the lungs take place through the blood from the lymphatics. The germs pass into the lymph circulation through the alimentary tract, through which they reach the lungs either directly through the subclavian vein to the right heart, or find lodgment in the glands and infect them, which infection may become acute and break down this structure rapidly, or may remain in a chronic, quiescent state for many years. Whether activity continues from the time of infection or sets up afresh in after years, the result is the same. Caseation and softening of these glands take place, causing a great number of bacteria and other tuberculous material to pass into the lymph circulation, from which they go directly to the lungs through the venous and pulmonary blood.

These bacteria and detritus from the broken-down glands find the first obstruction in their onward course at the capillary circulation in the lungs. These capillaries are depressed between more or less distended air vesicles, on account of which the progress of the blood is slightly impeded. These tubercular products at this point form small capillary emboli, in which condition they have no active, living matter directly in contact with them, which gives them more suitable surroundings for the long period of time it takes them to become implanted and begin to grow.

As soon as this growth begins to take place nature sets up her strongest defense, which is the formation of a tubercle. This process begins by the cell structures of the capillaries immediately in contact with these bacteria ceasing to form tubes for the circulating blood, and rounding up and becoming epithelioid cells which go to make up the foundation for the tubercle.

THE EARLY RECOGNITION OF TUBERCULOSIS WITH ESPECIAL REFERENCE TO ITS CONFUSION WITH MALARIA.*

By William Redin Kirk, M.D.,
Hendersonville, N. C.

It is well known to the medical profession that tuberculosis in its early stages, presenting as it does many symptoms which might just as readily be associated with various other conditions, is often unrecognized as such and the patient frequently treated for some other disease until the physical signs, which usually develop sooner or later, render the condition unmistakable. Even moderately advanced cases are sometimes confused with influenza, broncho-pneumonia, bronchitis, in the sub-acute and chronic form assumed in the old, and asthma and pleurisy may mask a tuberculous process for a time, although pleurisy is less likely to be misleading, since it is generally accepted that most pleurisys are tuberculous in origin.

These are the chief respiratory diseases which offer difficulty in diagnosis, while systemic conditions such as neurasthenia, chronic anemia and indigestion with malnutrition so often precede, or, in fact, are a part of the early development of tuberculosis, that it is always well to inquire into the underlying cause and not be content to treat these cases symptomatically, for more often than not the physician who does so finds to his chagrin that some one else has correctly diagnosed his case for him. These are the cases that complain of being tired all the time, that suffer from shortness of breath upon slight exertion, cannot climb hills or go up steps without fatigue or dyspnoea; they feel badly especially in the afternoon and often have a slight rise of temperature some time during the day, usually between one and four o'clock.

This type of the onset of tuberculosis, in a country where irregular and continuous fevers

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are the rule, may easily be mistaken for malaria, and when hastily examined and given quinine before looking for the plasmodium, may be treated for the latter disease, until the advent of physical signs clear up the diagnosis. It hardly seems necessary to call attention to the question of diagnosis between such diseases as tuberculosis and malaria, notwithstanding they have many features in common, when an examination of the blood can so readily settle the matter, but when patients present themselves for treatment who have been treated for malaria, when in the early stages of tuberculosis, it is interesting to know why mistakes so easily avoided should have been made.

One source of error no doubt is the perfunctory way in which temperature is taken, once or twice a day perhaps, or whenever the visit is made. A record of this sort is absolutely without value and highly misleading. To be of service it should be taken at two-hour intervals, beginning before the patient is up and continuing throughout the day. In doubtful cases the record for several consecutive days or weeks may be necessary. I am inclined to believe that hasty examinations, carelessly taken histories, and the failure to examine the blood will account for many errors. Blood examinations must, it need hardly be said, be thorough and frequent, says Minor, and the recognition of the plasmodium certain and positive before we can afford to treat a slow, irregular fever as malaria.

The early recognition of tuberculosis does not necessarily mean the discovery of the disease in its very earliest manifestation while it is yet a toxemia and before any physical signs have developed in the chest, for we are rarely so fortunate as to see these cases this early, but it does mean the diagnosis of the disease from the history, symptoms and changed breath sounds which are present to an appreciable degree some time before the adventitious sounds of destructive processes appear.

A carefully recorded history (I shall have more to say upon this point later on), painstaking physical examination, examination of the sputum, and the use of the different tuberculin tests, together with repeated examinations of the blood for plasmodium and the possible presence of tubercle bacilli should be sufficient to settle any case.

Refinement of technic in physical diagnosis and delicate laboratory methods may be reserved for the specialist when obscure cases require the skill acquired by varied experience and long practice, but the point I wish to emphasize is the fact that tuberculosis in its early and moderately advanced stages, while it is yet amenable to treatment, can be recognized by the ordinary methods of physical diagnosis and simpler laboratory aids.

The general practitioner, then, who naturally sees these cases first, is the proper one to diagnose them and if he is willing to devote the same amount of time and care the specialist does he will be rewarded in the end. Omitting then the unfamiliar and more technical means of diagnosis, I will confine my remarks to practical and generally used methods, useful alike to specialist and general practioner.

Of first importance is the history. If taken carelessly it is often most misleading, but if gone into with thoroughness and recorded systematically, it is of the greatest value. Some authorities even put it above physical examination. It should take into account exposure to infection, the length of time and intimacy of contact, as implantation may date back to a long and intimate contact, even though there may have been an intervening period of good health, which makes the contention of Behring and others that tuberculosis is often contracted in childhood with subsequent development in adult life seem consistent with the facts. After family history, a complete and detailed history of the patient's previous condition is of the greatest service; in fact, no examination is complete without it, and the assistance it gives in arriving at a correct interpretation of the physical signs will repay all the time expended upon it. Searching inquiry into the history of attacks of typhoid, malaria and grippe will often uncover a tuberculosis in its active stage, or find the lingering fever of pneumonia or typhoid to be a tuberculous process, made manifest by intercurrent diseases. Attacks of pleurisy, enlarged cervical glands and fistula in ano, all point to tuberculosis as a probable cause, and while strumous keratitis and otitis media with perforation and destruction of the tympanum may have been part of a former tuberculosis, their history in the absence of definite pulmonary signs may be the landmark to lead us back to the lost trail.

After the bacillus has found lodgment in the lung and before the period of softening; in other words, during the early stage of infiltration, the symptoms are those of toxemia, and while no one symptom taken alone is pathognomonic of tuberculosis, yet the group is highly significant.

Of all the symptoms, fever deserves first consideration. It is invaluable as an early indication of trouble and later as an index of the patient's condition. While a few cases will pursue an afebrile course, most of them show some rise of temperature during the day. The temperature may be intermittent or remittent, rarely continu-

ous, or may be absent for days or weeks at a time, but if a careful record be taken at two-hour intervals for several consecutive days one rarely fails to record some rise above normal.

In suspected cases that run a normal temperature, exercise should be ordered, recording the theromometer reading before and after the walk. These patients will usually show sub-normal temperature, if it is taken sufficiently early, and some elevation after exercise.

The sub-normal temperature is very characteristic of tuberculosis, and I think of equal value with the afternoon rise, when taken together with a quick pulse of low tension and a blood count, which shows no leucocytosis, even in the absence of physical signs in the chest, is strong presumptive evidence of tuberculosis. It should not be forgotten that digestive disorders, especially dilatation of the stomach, may be accompanied by a slight degree of fever, but appropriate treatment will clear this up.

Cough is a symptom never absent at some time during every case of tuberculosis; its character and diagnostic significance, however, are dependent on the progress of the disease, and diagnosis should not be contingent upon its presence or delayed for that reason, for it is often absent in early cases, or, if present, it is a dry hack, probably from pressure or irritation of the pneumogastric.

Chills are not noticed early, but slight rigors are often complained of. In a considerable number of cases the onset of pulmonary tuberculosis is with symptoms which suggest malarial fever. The patient has repeated paroxysms of chills, fever and sweats, which may occur with great regularity. In districts in which malaria prevails there is no more common mistake than to confound the initial rigors of pulmonary tuberculosis with it, says Osler. But as a rule, the similarity does not last long. The chills, fever and sweats of malaria take on their characteristic phases, and tuberculosis soon reveals itself by physical signs, or the presence of tubercle bacilli in the sputum. The resemblance is sufficient, however, to put the physician on the alert, and tuberculosis should not be excluded without positive evidence to the contrary.

Sweats are an inseparable part of the symptomatology of malaria, but they rarely occur early in tuberculosis, unless there is profound toxemia. Nervous patients may show some axillary sweating at the time of examination, and it is not unusual to notice moisture upon the neck and face of patients after short diurnal naps, long before other symptoms appear. The endotoxin of the bacillus is responsible for the sweating in these early cases, thinks Cornet, by its effect upon the vaso-motor system, and it is probably the cause of the flushing after exercise or excitement; one other symptom, langour, which may be ascribed to the same cause, is highly suggestive, although not peculiar to tuberculosis.

The circulatory system is disturbed early also from absorption of toxin, I think, instead of from atrophy of the heart, as believed by some, for tachycardia is noticed early before cardiac degeneration could take place. Patients complain of quick pulse long before they notice any fever, as a rule.

The pulse generally runs from 90 to 110, even going as high as 120 in some. A quick pulse not otherwise accounted for, coupled with other suspicious symptoms, is good evidence for further investigation.

The blood pressure is usually low in tuberculosis, especially in the latter stages, except when the kidneys are involved or in fibroid phthisis with emphysema. Authorities differ as to how valuable hypotension is as an indication of early involvement; in my experience it is fairly constant as a symptom in early cases.

For the reason that the early diagnosis of tuberculosis is principally a matter of inference and must be arrived at from history and the evidence we may find of toxemia, I have dwelt at some length upon these features in preference to taking up the physical signs to be found in the lungs.

Alteration of the breath sounds may be all that can be heard in very early cases, so it is well to listen carefully to the quality of the inspiratory as well as the expiratory phase of quiet breathing, comparing one with the other. It is well to study the inspiration first, ignoring the expiration, and then the expiration by itself, finally noting the character of both taken together for any modification of pitch, duration, intensity of rhythm, especially over the apices and in the supraspinous fossa.

Rough, granular breathing, or the so-called rude respiration of Grancher, is the earliest departure from normal vesicular breathing to be heard, and when found in favorite locations with any degree of persistence in conjunction with symptoms of toxemia is fairly indicative of a localized tuberculous focus.

Inspection, palpation, percussion and auscultation should be the regular routine practice in examinations of the chest, saving auscultation for the last, but not ignoring the others, as each may lend something to the general clinical picture.

No examination should be begun if the doctor

or patient is in a hurry; there is nothing to gain and much to lose. The room should be quiet and both doctor and patient in restful positions, for the physical signs cannot be elicited to the best advantage when either one is in a strained position. It seems hardly necessary to call attention to the importance of examining the bare chest were it not so often the habit to examine through some light covering—a mistake most usually made with women in deference to their modesty. I have never found the least objection on the part of any of my female patients to uncovering the chest, and do not believe others will have any difficulty if they approach their patients properly.

Without attempting to go into physical diagnosis in detail, I would like to call attention to a few points in connection with the recognition of tuberculosis in its early stages. Altered breath sounds are the rule, and rales the exception in early cases. Lessened motion of the diaphragm is an early sign; Williams demonstrated it by the fluoroscope. It was also observed by Litten, whose shadow test is familiar; and Kronig has called attention to the fact that the motion of the lower border of the lung is diminished when the lung is involved to a small degree, and Pottinger claims that the entire side lags even in slight involvement of the apex. Exploration of the entire chest is always necessary, but especial care should be used in observing certain areas, the apices, front and back, the first intercostal spaces, the area under the scapula which is partly uncovered when the hand is placed on the opposite shoulder, the area on each side of the vertebra between the scapulae and the lower border of the lungs.

Rist, in a recent paper, claims the lower lobe is almost invariably the site of the initial lesion in children and that the apex is involved secondarily in both children and adults, explaining that cough forces infectious material into the apex. Of the accessory means of diagnosis, I shall have only a few words to say. Search for the bacillus should be thorough, and negative cases examined repeatedly, for while finding the bacillus is the only absolute proof, a negative result is not positive evidence of the non-existence of tuberculosis. Too often patients are assured they have no tuberculosis upon this evidence alone.

The general practitioner is not expected to make use of Arneth's method of differentiation of the nucli of the neutrophiles, the opsonic index and other more difficult laboratory means of diagnosis, but in all suspected cases he can and should use some of the tuberculin tests, Moro's, Von Pirquet's, or the old method of the subcutaneous injection of Koch's old tuberculin.

THE CLINICAL VALUE OF THE TUBERCULINS IN THE DIAGNOSIS AND THE TREATMENT OF TUBERCULOSIS.*

By Wallace J. Durel, M.D.,
New Orleans, La.

In considering the clinical value of the tuberculins as diagnostic and therapeutic agents, one must view the question with an unbiased and unprejudiced mind.

Much has been said against the clinical value of the tuberculins, so much so, that, had not the tuberculins proven to be valuable adjuncts in the hands of unprejudiced or close observers, they would be today completely discarded.

Clinically we all agree that:

1st. A tuberculin test showing negative results absolutely denotes that the tubercle bacillus has never invaded the human organism, in so far as to form a "tubercle."

2nd. A tuberculin test, when reacting "positive," indicates the presence of a "tubercle" in the human organism, regardless of its size or location.

3rd. A "positive" tuberculin reaction in a child under five years indicates an active tuberculosis, but in the adult may indicate the response of a "latent" lesion as well as that of an active lesion.

Because of the fact that tuberculin reacts "positive" in the adult with "latent" pulmonary tuberculosis, or in the adult with a hidden latent tubercular focus, some have concluded that the tuberculin test loses all clinical value when administered to a person over five years of age.

This "sweeping" decision, I believe, is not quite entirely right, for those of us who have seen, in our clinics, scores of patients with clinical pictures closely simulating tuberculosis, pulmonary and elsewhere—feel that in the tuberculin test we have as corroborative evidence—the one important fact that the tubercle bacillus has, or has not, formed an active or latent tubercle in the human organism.

If not for the corroborative evidence of the tuberculin "positive" or "negative" reaction, we cannot but feel doubtful and embarassed when we are asked point blank: "Has this patient tuberculosis or not?"

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*Read before the Sixth Annual Meeting of the Southern Medical Association, Jacksonville, Fla., November 12-14, 1912.

If we do not give to such a case the benefit of the tuberculin test we are forced to give him the benefit of the doubt, and consider him as tubercular until all suspicious clinical evidences will have disappeared. This is not done without some sacrifice and worry to the patient, much more regrettable if he proves to be free from any tuberculous infection.

There are several diseases which we may confront in diagnosis, and which often closely simulate pulmonary tuberculosis; for instance, the **coccic pulmonary** and the localized **"gripped" pulmonary** infections.

The localized grippe pulmonary abscess and the localized apical pneumonia, with slight constitutional disturbances and slow resolution, I have seen mistaken for pulmonary tuberculosis.

There are conditions of the heart and mediastinum, of the upper and middle respiratory tract, of the pleura, etc., that also have often been mistaken for tuberculosis. Therefore, by reason of the fact that a tuberculin test with negative results denotes absolutely that the human organism has never been invaded by the tubercle bacillus, it completely eliminates the slightest suspicion of a tuberculous infection, active or latent, thereby permitting us to exclude tuberculosis, and to diagnose, in a clear and positive way, the disease simulating tuberculosis.

If a patient has an active or latent tuberculosis he will react "positive," if not to the first, surely to the second tuberculin test.

Anyone who has given the tuberculin test to hundreds of individuals will soon be convinced of that fact. There are, however, certain conditions where tuberculin shows no reaction, i. e., in the advanced and acute pneumonic tuberculoses, but, fortunately, these conditions are easily diagnosed without the tuberculin "reaction."

Is the individual who is harboring a latent lesion and who is apparently clinically well by physical findings, etc., but who reacts "positive" to tuberculin, on the same health basis as the individual who shows no reaction to several tuberculin tests? I do not think so. Certainly, I would not like to be one reacting to tuberculin under such conditions. I would feel the sword of Damocles continuously menacing me, and certainly could not compare my chances for developing an active tuberculosis as remote as the individual who has never, and does not, harbor the tubercle bacillus in his organism, and who, consequently, never has reacted "positive" to tuberculin.

That a latent tuberculosis should react to "tuberculin" certainly indicates that the tissues' cells are still "influenced" by the toxic tuberculin products formed in the latent lesion, keeping below "par" the resistant cells of the body, and thus preventing the complete eradication of the disease (or cure of the disease).

For the above reasons I cannot see why we should disregard the significance of the "positive" tuberculin test in the adult, though we find enough clinical and physical evidence in any lesion or lesions to feel that they are not actively caused by the tubercle bacillus—we should consider the depleting influence of the tubercle toxic poisons on the tissues' cells, and I am convinced that from a clinical standpoint we should give such an individual all chances for the upbuilding of his tissues' resistance by insisting upon an "anti-tuberculous" mode of living, without any aggressive or special form of treatment.

By disregarding the tuberculous condition of such an individaul we fail to "lift" nature's cellular resistance to its efficient function, and may permit a virulent outbreak of a newly infecting disease, or a reviving of an "old" latent tuberculous focus.

No one today can show by statistics that the mortality percentage of reacting clinically healthy individuals is not greater than in the non-reacting individuals.

In the past ten years I have observed scores of individuals who reacted "positive" to tuberculin, and I have wondered at the number who were not properly tagged as tubercular, in view of the fact that the "physical and clinical findings" were not sufficiently marked.

Many such individuals I have passed upon for the sake of observation—placing upon them the tag of "non-tubercular" until the time when the clinical picture was clear, or until the disappearance of all suspected symptoms.

I have had the opportunity of following quite a number of these "positive" reacting and apparently clinically-well individuals, and have seen them develop active and destructive lesions, so much so that I do not hesitate today to call "tubercular" any clinical evidence and physical findings that simulate tuberculosis, provided the corroborative tuberculin reaction was positive.

I believe that it is better practice to do this than to leave the patient go uninstructed and in doubt, and left to "time" for a clear and positive diagnosis.

A proper "mode of living," without any special medication, in such cases will be all sufficient, in most instances, to avert disastrous results. No one will deny the fact that a positive reaction to tuberculin surely denotes the presence of a tubercular focus somewhere, whether it be latent

or active. If latent, it does not change the outlook of the future, for, at any time, any latent focus may become active. This we see often demonstrated when observing large numbers of "tuberculars."

For this very reason at the last meeting of the National Association for the Study and Prevention of Tuberculosis it was suggested to eliminate the word "cure" in reporting statistical results of tuberculosis.

The above shows clearly that many of the so-called "clinically-well" are often latent or hidden tuberculoses, and cannot be classified as well, for a large percentage sooner or later show signs of reactivity or relapse.

In my personal observation of several hundred cases it is evident that of eighty cases which were treated previously to 1909, of all those discharged as apparently well and who were given the tuberculin test (the test proving negative), not one relapsed; yet many of the cases showing a distinct positive reaction upon their discharge and after, relapsed, and three died since.

This small evidence further convinces me that repeated tuberculin tests will show whether treated and supposedly cured cases are free from any "tubercular focus," active or latent, regardless of its size or location, and that the negative reaction means more than a mere tox-immunity in such cases.

The "clinical" therapeutic value of the tuberculins is exemplified in the tabulated records of eighty cases of tuberculosis treated in Louisiana previous to 1909. In this report we see that:

In the first stage thirteen cases were treated, with recovery in all, and no relapse up to 1912.

In the second stage sixteen cases were treated, with recovery in fifteen, and "arrested" in one.

In the third stage thirty cases were treated, fourteen apparently well, and sixteen arrested.

In 1912 one of the apparently well cases had relapsed, and one died.

Of the arrested cases three relapsed and two died.

Of the third (advanced) stage twenty-one cases were treated; not one got well, nine were arrested, ten were improved, and two non-improved.

REPORT OF LOUISIANA ANTI-TUBERCULOSIS LEAGUE CLINIC, 390 CASES TREATED. FROM NOVEMBER 2, 1908, TO DECEMBER 31, 1909.

	Number	Cured	Improved	Stationary	Relapsed
First Stage	95	50 (52.6%)	25 (26.3%)	20 (21.1%)	20 (21.0%)
Second Stage	145	20 (13.7%)	75 (51.7%)	50 (34.6%)	25 (17.2%)
Third Stage	150	none	50 (33.3%)	100 (66.7%)	100 (66.7%)
Total	390				Total. 145

IN ALL STAGES.

390 cases.....	70 cured	17.9% apparently cured
390 cases.....	150 improved	38.6% improved
390 cases.....	170 stationary	43.5% stationary
Unaccounted (arrested, relapsed or died)		37.2% unaccounted

FORT STANTON, N. MEX., 1911 TO 1912.

	172 Cases	App. Well	Arrested	Improved	Unimproved	Dead
Incipient	23	10 (43.5%)	9 (39.1%)	2 (8.7%)	2 (8.7%)	
Moderately advanced	41	7 (17.0%)	14 (34.1%)	10 (24.3%)	2 (4.9%)	8 (19.5%)
Far advanced	108	3 (2.8%)	34 (31.5%)	13 (12.0%)	11 (10.2%)	47 (43.5%)

REPORT OF EIGHTY (80) CASES TREATED IN LOUISIANA AT COVINGTON SANATORIUM AND IN NEW ORLEANS, LA., BEFORE 1909.

Stage	No. of Cases	App. Well	Arrested	Improved	Non-Improved	Relapsed and Living	Died
First	13	13 (100%)	....	....	....	....	....
Second	16	15 (93.7%)	1 (6.3%)	....	....	....	....
Third	30	14	16			App. Well. 4 (13.3%)	Arrest. 3 (10%)
		1909. (46.7%)	(53.3%)			3 Arr.	1 App. Well
		1912. (40.0%)	(36.7%)				
Third advanced	21	none	9	10	2	1	16
			1909. (42.9%)	(47.6%)	(9.5%)	(4.7%)	(76.3%)
			1912. (19.0%)	None	None		

In 1912 sixteen of the twenty-one cases have died.

The above teaches us a most practical lesson in that the early diagnosed cases of tuberculosis can be treated with far better and more lasting results than the advanced cases. Therefore, let us diagnose our cases before they reach the third stage, but this, unfortunately, is too frequently not done even today.

As for the treatment followed in the above reported cases, the dietic, open air, and rest methods were rigidly enforced, and creosote and other symptomatic medications were also used when indicated.

Tuberculin was used in all cases. To the tuberculin I must attribute the greater part in finally overcoming the disease, for it was used only after the stimulating effects of diet, rest, air, etc., had failed under a fair lapse of time.

To the tuberculin I can attribute the marked changes in the blood pictures, both neutrophylic and leukocytic.

The same that altitude, air, diet, exercise, creosote and Beer's hyperemia method, etc., stimulate the leukocytosis of both matured and immatured leukocytes, much more so does tuberculin, and in such a way that it can be absolutely controlled and used as a whipping means for the proper supply of leukocytes.

In an essay read before the National Association for the Study and Prevention of Tuberculosis last May I gave my observations of the effects of tuberculin upon the leukocytes and lymphocytes, both as to number and nucleic changes, showing how tuberculin affects the polynuclear neutrophyle, leukocytic blood picture, thus favoring the supply of nature's chief resisting cells, that is, those endowed with the richest anti-body resistant ammunition.

Let us now compare results of some tuberculin and non-tuberculin treated cases.

Looking over various reports and statistics from different institutions, those of Fort Stanton, N. M., strike us most forcibly. Remember that tuberculin has been discarded at Fort Stanton, so also the use of many other serviceable remedial agents, as creosote, etc. The results, as published in the monthly report of August 30, 1912, do not speak favorably for the action of Fort Stanton's staff in rejecting tuberculin, etc., as adjuncts in the treatment of tuberculosis. The fact that with 11.6 per cent apparently cured, 33.2 per cent arrested, 31.9 mortality, Fort Stanton's report is not encouraging to the poor consumptive, and certainly is not on a level with many other reports where tuberculin, etc., were used. For instance, the Louisiana Anti-Tuberculosis League Clinic reports 390 cases treated in New Orleans, in 1909, without tuberculin, but with creosote and other accessories, giving: 17.9 per cent apparently well, 43.5 per cent arrested, 38.6 per cent improved, and 37.2 per cent relapsed or died.

The report of the eighty cases treated with tuberculin, etc., in Louisiana previous to 1909 shows 52.5 per cent apparently well, 32.5 arrested and 23.7 mortality—this in a low altitude, but with the aid of strict dietetic and open air treatment with tuberculin, creosote and all other accessories as they were indicated.

In the above we have a practical expose, showing that tuberculosis, as contended by some, is not best treated by rest, diet and open-air life alone, but that other accessory agents, as tuberculin, creosote, etc., are necessary in the majority of cases to help nature in bridging the patient over to recovery.

I have avoided all theoretical discussions as far as possible, and hope that I have expounded the

TOTAL PERCENTAGES IN ALL STAGES.

1912		1909
50.0%	Apparently well	52.5%
26.3%	Arrested	32.5%
	Improved	12.5%
	Non-improved	2.5%
23.7%	Mortality	23.7%
	Mortality from hemorrhage	10.5%
Total, 100.0%		

REPORT OF 172 CASES TREATED AT FORT STANTON, 1911-1912.

Total Percentage in All Stages—	
Apparently cured	11.6%
Arrested	33.2%
Improved	14.6%
Mortality	31.9%
Non-improved	8.7%
Mortality from hemorrhage	10.7%

facts in this essay so that some, if not all, Southern doctors will not condemn with prejudiced mind the use of tuberculin products without giving them a fair and sufficient trial by their proper application and administration—the polynuclear neutrophile leucocytic blood picture being, in my opinion, the safest guide for the proper administration of the tuberculins.

Another fact worthy of notice is that the cases reported from Louisiana are an examplified and practical evidence that our Southern climate is as well adapted and suitable for the treatment of tuberculosis, better, in fact, in some respects, than other climates.

No doubt patients can live an open-air life in our southern states as thoroughly and with the same enforcements as patients in any other

climate. The abundance of sunlight is a very favorable factor, a strong asset, in favor of our southern climate. This we see exemplified by the scarcity of acute pneumonic tuberculosis in our southern states. Our house construction also forms an important item in the warfare against tuberculosis in the south, so also does our mode of living.

Therefore, as nature has been so kind as to give us such favorable climatic conditions, let us show in the future, by statistical reports of aggressively treated cases, that in our southern states we can, with aggressive treatment, promise the white plague sufferer as good results as those of any other locality.

INDIVIDUALIZING THE TUBERCULOUS PATIENT.*

By Lucius B. Morse, M.D.,
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Physician in charge of Dr. Morse's Sanatorium.

The burden of this paper is to call attention to the all too common habit of generalizing the treatment of the tuberculous patient, and to emphasize the need of individualizing the care of such cases. There are several reasons why the treatment of these patients becomes general in its nature. First of all there has been an enormous amount of matter in the popular press regarding the treatment of pulmonary tuberculosis. The public is always on the alert for some short cut, some easily remembered phrase or formula, which, if followed, will bring about a speedy restoration to health. The average American newspaper reader possesses rather scant respect for minor details. The newspaper man's business consists largely in understanding what the public wants; as a result tuberculosis therapy has been reduced to a few general rules, and the cure rendered simple. The formula commonly put forward is the greatest possible amount of rest, fresh air and good food—all well enough so far as they go. Laymen and physicians alike very frequently look upon this generalization as being all-sufficient.

Another reason why the treatment of this grave disease becomes so commonly general rather than individualistic is the fact that many otherwise excellent physicians after a few months weary of the many details involved, they drift into routinism and in not a few instances the "cure" is turned over to the patient. What applies in this connection to tuberculosis applies in like manner to the treatment of many chronic ailments. With the acute disease it is different—the changes are rapid, and the attention and interest more easily held—each case being one of action. Not so with the chronic disease. The successful management of pulmonary tuberculosis demands sustained interest.

General formulae and principles are valuable only in so far as they constitute the foundation upon which is erected an elaborate and useful superstructure of details. There is probably no other disease wherein the supervision, regulation and control of the minutae of the patient's daily routine counts for so much as it does in chronic, pulmonary tuberculosis. Detailed management is valuable in all chronic diseases, but in relatively few of them do we have to confront constantly, month in and month out, the problem of toxemic infection.

I confidently believe that the most important duty of the man who is treating tuberculosis is the singling out and correction of the things that kill. By this I mean the infinite number and variety of little things that weigh in the balance against a cure from this treacherous disease, and, in the daily observation of the patient, the task of the physician here, as elsewhere in the practice of medicine, is to reason, not from cause to effect, but from effect back to a probable cause. It is exceedingly difficult at times to ascertain and correct the cause of some aggravation of symptoms, and yet this is a most essential thing to accomplish. A patient who is under any sort of control will rarely commit the graver types of indiscretions, so that real success in tuberculosis thereapy comes down to a nice regulation of the minor details.

Now, in this every person is a law unto himself. What is meat for one is another man's poison—every patient must be individualized. General rules are valuable, but in regulating the life of each individual the execptions are most conspicuous; so much so, indeed, that one calls to mind the Frenchman's ejaculation concerning the rules for spelling English words, viz.: that it was **exception, exception, exception!**

Probably the explanation in part at least as to the reasons for good physicians tiring of tuberculosis, is lack of time on the one hand and opportunity on the other to supervise the details of the patient's daily life. A daily clinical chart of some sort which is kept by the patient or nurse is of great assistance. It can be of the loose leaf variety, in book form or in continuous rolls such as I have devised. The great value of a chart of

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this character is that it constitutes a compact, abriged, graphic, clinical, daily record of the patient, with the immense advantage that the physician has the daily check on the case with the possibilities of a quick review. (See Figs. 1 and 2.)

It might not be amiss to call attention to some of the unusual, contradictory and otherwise interesting things that come up constantly in the management of tuberculous patients to exemplify more succinctly the need of greater individualization. In the outset it must be remembered that the temperature curve is the physician's guide board. On its tracery can be read the minutest details affecting the patient's daily life. Herein we can see, step by step, the road along which our patient is traveling. All patients should take, read and record their own temperature. Do not be fearful that your patient will form the "thermometer habit." If there is anything that is now proven, it is that patients are directly benefited by taking their own temperature. Only rarely do they become morbidly introspective. By and with the guidance of a physician it enables the patient to check up, to keep "tab" on himself, if you please. It makes him responsible for his every act. Remember and teach this dictum to all such patients! "The cure lies largely within yourself." Doctor and patient alike must be co-partners in the fight. The two-hour temperature record might almost be called the physician's stock ticker.

How frequently do we see the half degree of temperature rise from a game of cards, writing a letter or even from reading. I knew one patient who invariably developed temperature from simply the reading of a newspaper. The same patient could walk two miles a day with no evidence of fever reaction. A physician was under my care for incipient closed tuberculosis. He was on five-mile daily exercise with never any reaction, but a few minutes of worry would invariably develop a degree of fever. Excessive cough is, of course, a common cause of febrile reaction and must, if possible, be controlled.

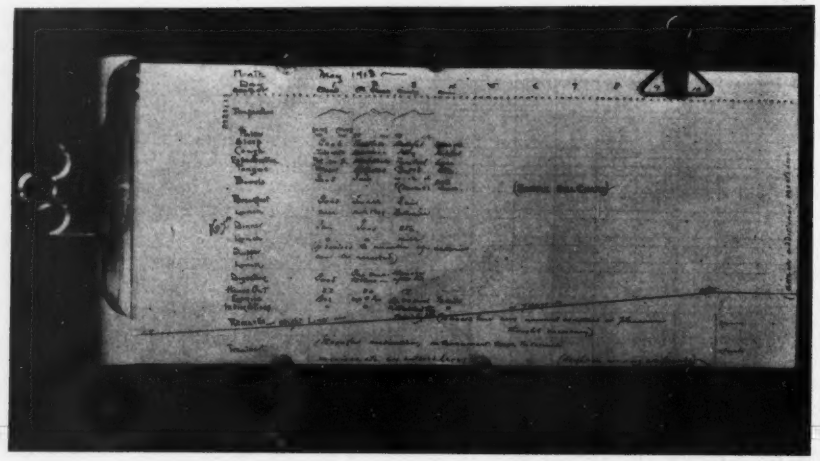

Fig. 1 — This chart is largely self - explanatory. The daily record is seen to be in vertical columns, the temperature and weight line is charted in, the latter once a week, the horizontal lines representing pounds or multiples of pounds. Additional sheets are quickly attached by liquid glue (Le Page's tubes). The whole chart is gradually rolled upon 1 - inch wooden rounds, and retained by the usual "clip" of a writing board.

Fig. 2. Shows the completed roll ready for filing.

The care of the hair in women, and especially the washing of the hair, will cause some rise of temperature, I should say in every instance. I have seen blood streaked sputum simply from the act of washing the hair. The process is always a tiresome one in frail patients. Men almost as commonly have temperature, in greater or less degree, from the act of shaving. These are seem-

ingly trivial things, but they all figure on the debit side of the patient's struggle for health.

Heat and cold, sun, shade and wind currents all markedly affect the thermometric reading. I have seen one and one-half degrees of temperature rise from sitting before an open fire. I have also had some patients whose temperature invariably rose after sleeping in day time. I mention these things to show the need for care in properly interpreting the daily temperature curve.

How often too do we see temperature rises from talking and laughing, something that is most difficult to control, but, nevertheless, demanding at times severe restrictions. I have seen these same temperatures disappear in cases who had throat complications wherein all use of the voice had been interdicted. Of all the certain fever producers, however, and the one that gets physician and patient alike into trouble, is visiting. The pernicious habit of visiting the sick is a custom of great antiquity, but this is about all it has to recommend it. One is almost constrained to say, from our neighbors and friends, Good Lord, deliver us.

Rest is unquestionably our sheet anchor in the treatment of fever; yet I have repeatedly seen a lingering bed temperature disappear on moderate exercise. Similarly the pulse rate is increased very markedly by exercise, and should be most carefully watched; yet on one occasion I witnessed, in a young man, a sustained average fall of fifteen heart beats per minute after the beginning of exercise, all of which demonstrates the need of more closely individualizing these patients.

I not infrequently take the pulse during and following exercise. Some most interesting things are thus disclosed. One young woman, well nourished, afebrile, was on exercise. Her average pulse rate at rest was 85. To my utter amazement her pulse on moderate exercise was 160. It was the only abnormal condition I was ever able to discover. On very slow walking her pulse would be over 130, and on ceasing exercise it would quickly fall to normal. I was never able either to account for it or correct it. The patient has been well for three years. I have seen a markedly irregular pulse in a young man from a game of bridge, never observed at other times. Not infrequently will one see an increase of cough with the initiation of acute constipation. I witnessed on one occasion the disappearance of a most annoying, irritating cough occurring each morning by the use of bed shoes and a hot water bottle to the feet.

The accurate observation of bodily functions is likely the greatest usefulness which the physician derives from the use of some sort of daily clinical chart such as I have devised. The record which is thus kept enables the attending physician to keep closely in touch with the patient's condition with a minimum of expenditure both of time and energy. The quick comparison of temperature curves and of the weight line is of immense advantage over the other forms of clinical sheets.

It is likewise possible to show accurately and graphically the effects of all therapeutic measures used in the care of the case. The smallest temperature reaction from tuberculin, or possibly from an autogenous vaccine, can almost instantly be picked out on such a clinical chart, all of which counts for greater individualization.

In the foregoing I have attempted simply to demonstrate how only a few of the apparently trivial and unusual things affect the welfare of these people. The tuberculous patient merits and deserves more individualizing than he commonly receives. The sanatorium is the ideal place for putting into operation the ideas set forth in this article, but a great deal more could be done by the man in general practice, and in the continuous roll chart, such as I have devised, the physician will find an ally of incalculable assistance in the closer observation of these patients.

RELATION OF GAS EMBOLISM TO THE PRODUCTION OF ARTIFICIAL PNEUMOTHORAX.*

By Stevens T. Harris, M.D.,
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From all sides come reports of the employment and success of artificial pneumothorax as a treatment of tuberculosis of the lungs. It is safe to say that the results of no other method ever employed can compare with the wonderful results obtained by this procedure. In fact, it is the only real curative treatment for phthisis which has ever been devised. One has but to try it to be convinced.

The afterglow of the tuberculin mirage is beginning to fade. The significance of this statement can be appreciated when it is stated that the United States Army has discarded tuberculin as worthless, and that the immortal dean of American phthisiologists has had artificial pneumothorax produced on himself.

Surgical procedure has again scored a victory. Artificial pneumothorax, like other surgical methods, has its dangers—the chief among these is

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gas embolism. It is safe to say that nearly all of the deaths due to the treatment have been caused by this condition. The percentage of deaths occurring from gas embolism during the operation is small, perhaps 1 per cent. It is likely that the earlier attempts, with lack of technical knowledge and ignorance of how to combat gas embolism when it occurred, as well as crude apparatus, has swollen the percentage of death rate from this condition. In spite of experience and modern apparatus, gas embolism is an ever-lurking menace lying in ambush for the patient. Of course, embolism could be produced by forcing gas into any blood vessel within the lumen of which the needle might be resting. It is also likely that gas could be forced into a blood vessel which had been torn or pierced even while the point of the needle is not within it. There are reasons to believe that gas may be aspirated into certain blood vessels of the lung—most likely veins. Possibly some of the sudden deaths reported from spontaneous pneumothorax, as well as the epileptic convulsions and sudden deaths associated with thoracentesis, have been due to gas embolism.

In the course of experiment on a sheep, after a Brauer incision had been made, we noticed that a vein underlying the parietal plura would blanch and become bloodless in a certain stage of inspiration, and later would fill and show well-defined waves of blood synchronous with the heartbeat.

In the case of Mr. J, a fine hypodermoclysis needle had been introduced and connected with the manometer. There were fairly free readings of the manometer up and down, but the readings were of such a character as to indicate that the point of the needle was in a cavity, as I believe it was, or in some way connected with a bronchus. However, the gas was turned on and after 300 c.c. had been introduced, the patient felt queer. A reading of the manometer was taken. The movements were as at first, indicating neither sustained negative nor positive pressure. The needle was withdrawn and found free. Comparatively slight symptoms of embolism were produced, and the patient rapidly recovered under restoratives. In this case the indications were that the needle had pierced a blood vessel, and that a slight amount of gas was aspirated while the point of the needle was beyond the blood vessel. In this case there was only moderately thickened pleura, and there were many adhesions, as has been shown by failures to produce a pneumothorax, both before and after this embolism. In this case a curious mottling and cyanosis over the front of the right side of the abdomen and extending for a distance up the thorax was observed. The injection was made on the right side.

In the case of Miss S., a fine hypodermoclysis needle had been introduced. The wire probe was removed. The needle was not even connected with th gas machine. It remained thus for a few moments—open. For some reason the needle was withdrawn and found to be partially filled with blood. A few seconds after the withdrawing of the needle the symptoms of an all but fatal embolism began. In spite of immediate recognition of the condition, and every appliance and help at hand, this patient lay at death's door for hours and at one time was thought to be hopeless. Please note that this patient had thickened pleura, as shown by the X-ray, and had adhesions in every direction, as had been demonstrated by repeated failures to produce a pneumothorax, and that she had previously had a number of slighter embolisms. During the course of the embolism referred to in the above case, there was evidence of acute dilatation of the stomach.

In the case of Miss K., a fine hypodermoclysis needle had been inserted. The wire probe had been withdrawn, and the needle connected with the manometer. There were no movements of the manometer. Supposing the needle to be too deep, it, still connected with the manometer, was withdrawn to a point where negative pressure began to show. This negative pressure increased with each inspiration until four centimeters of water were indicated. There was no up and down movement of the manometer synchronous with inspiration and expiration as you would expect in a free pleural space. This was noticed when the readings reached the indicated point. The patient was instructed to cough, which she did. At this time she began to complain. The needle was withdrawn and found partially filled with blood. Combative measures were immediately employed, in spite of which a very severe gas embolism was produced. It would very likely have been fatal had it not been for prompt and vigorous measures.

This case is especially interesting for several reasons. First, because there was a measured amount of gas introduced, namely, 4 c.c., and that this amount of gas likely would produce a fatal embolism. Second, it definitely proved that gas can be aspirated into the intra-thoracic circulation and with a force of at least 4 c.c. of water.

This case also had thickened pleura, as shown by the radiograph, and many adhesions, as has been demonstrated by failures to find any considerable free pleura in attempts before and after this embolism.

The observations in the animal experimentation and these cases are given for the purpose of showing that at a certain stage of respiration there is a negative pressure or suction in some of the blood vessels within the thorax.

If you will pardon the digression, I would like to suggest that the physiological function of the lungs is not alone that of respiration, but also has to do with the dynamics of the circulation of the blood. It is easy to conceive how the rapid expansion of the extremely vascular lung could cause space within itself more rapidly than the blood stream could supply, and that the converse would be true—that a rapid contraction could increase the tension within the lung, and consequently the force of outflow of blood from the lung.

To return, these observations show that this negative pressure condition can be a cause for the production of gas embolism in spite of careful technic and modern apparatus. I know of no technic nor apparatus which can completely overcome this danger. Be it understood that the probe must be passed through the needle in order to clear it and taken out to be observed, and that the whole progress of the gas filling and indication for turning on the gas is governed by the movement of a manometer or pressure gauge, either one of which might allow a certain amount of gas to be aspirated.

They also indicate that a thickened pleura and adhesions are signals for careful work. We have had a number of other embolisms, and in all these cases these two conditions were present.

These cases show that a cavity or bronchus cannot be injected without an element of danger.

The cases also indicate that a fine needle should not be used except after the formation of a positive pleural cavity, for the reason that the point of a fine needle is more likely to rest within the lumen of a blood vessel.

It is indicated by these cases that when a manometer or pressure gauge shows a comparatively slight negative pressure rise with each inspiration and no appreciable reaction from each succeeding expiration, that you are in imminent danger of gas embolism.

They further show that it is dangerous, after having inserted a needle and withdrawn the probe, to leave the needle open to atmospheric pressure.

These cases also suggest that the ordinary open water or mercury manometers should be succeeded by a closed pressure gauge, preferably of the variety used in the blood pressure apparatus, where the pressure is transmitted through a diaphragm.

In order to avoid gas embolism from the injections, no gas must be introduced until you are positive that you are between the visceral or parietal pleura. This is ascertained by the free movements of the manometer or pressure gauge up and down or back and forth synchronous with inspiration and expiration. In the beginning of the injection, these readings will be more or less negative, and as pleural space capacity decreases, they will go from negative to more or less positve pressure. When you are within a pleural cavity cough produces a sharp rise in the pressure. A quick, deep breath produces a sharp decrease. Clearing the throat produces a decided rise. Talking or counting with sustained respiration produces a rise. Sustained inspiration with the mouth and glottis open, as if in an effort to still continue inspiration, will produce a sustained decrease in the pressure. Sustained expiration in the same way will produce a sustained rise. If these pressures are not sustained in the manner described, you are not within a pleural cavity, but very likely within a lung cavity or bronchus.

It is noteworthy to state that as the needle passes through the parietal pleura there will likely be more or less pain, but after having passed through, in a few moments the pain almost invariably ceases, and the needle may be held in this position between the two layers of the pleura without further pain for a long while. As the point and end of the needle pass through the parietal pleura you feel a loss of resistance. If the needle be blunt enough you may hear a muffled sound like passing through parchment. After the point of the needle has passed the parietal pleura the probe gives evidence of some space or at least softened resistance.

The chances for gas embolism are remote after you have definitely proven free pleura and more or less of a cavity has been formed. In fact we have never seen it occur when this was the case, except where there were thickened pleura and some adhesions, and where too high a pressure was suddenly produced.

It should be remembered that the slightest feeling of strangeness, queerness, numbness, tingling, dizziness or blindness on the part of the patient are the usual premonitory symptoms of embolism. These could progress to various paralytic phenomena, spasms, usually tonic, epileptiform convulsions, loss of sensation, dilation of one or both pupils, etc. There could be unconsciousness, syncope, cyanosis, and other symptoms produced by embarassed circulation or heart action and respiration. Vomiting while unconscious, strangely seems to precede improvement. The hopeful

symptoms are return to consciousness, improvement in respiration and circulation, and abatement of the above-mentioned symptoms, all or some of which might be present in any one case.

The treatment consists in the prompt use of analeptics, especially nitroglycerine, ammonia inhaled and internally, strychnia, and at times morphine and atropine. Oxygen inhalation should be commenced as quickly as possible and kept up continuously until permanent signs of improvement are shown. Artificial respiration should be used when indicated. Electricity is said to be useful. Constant attention and watching should be given the patient for many hours after improvement has occurred, as the condition can return with even more violence than the first attack.

One case of this most appalling condition usually suffices for the most ardent seeker after experience.

DISCUSSION.

Dr. John T. Halsey, New Orleans: I would like to ask Dr. Harris whether the danger of gas embolus could not be largely, if not entirely, avoided by the use of the cannula and trocar, instead of the aspirating needle. It would seem to me that if the puncture was made by a cannula with sharp pointed trocar, and then the sharp point withdrawn, and then moving around slightly to the blunt rounded end of the trocar, it would make it absolutely impossible for this trocar to remain within the vein, and so it would seem to me this would practically eliminate the danger of gas embolism.

Dr. Graham E. E. Henson, Jacksonville, Florida: With reference to the paper read by Dr. Kirk concerning the early recognition of tuberculosis and its confusion with malaria, I think Dr. Kirk laid too much stress upon the presence of chills in malaria. He described the typical tertian type, and it must be remembered in the estivo-autumnal types we do not have the shaking rigor, or the intense perspiration that we see in the benign tertian. Also in the treated tertian type the chill may be absent, and we have more or less, especially if it is a double infection, continuous fever. On this account the danger of early recognition of tuberculosis and its confusion with malaria is apt to be overlooked, especially in those communities where the estivo-autumnal types of malaria are present. An examination of the blood for the purpose of differential diagnosis will show that in tubercular lesions, while a leucopenia may be present, there is not the large excess of mononuclears that we will find in malarial infection. In fact, the small lymphocytes will be, as a rule, very much in excess.

Dr. William Litterer, Nashville, Tenn.: With reference to bovine and human tuberculosis, I have made some investigations with especial reference to the examination of the tuberculous glands, and have now examined sixteen cases consecutively, working it out according to Theobald Smith's glycerin-bouillon as a reaction. Of these sixteen cases, nine proved to be of the bovine type. Also in five autopsies in children who died from tuberculosis I found that the mesenteric lymph nodes contained bovine bacilli in three. The other two were of the doubtful type, the examinations having been made in accordance with the Theobald Smith bouillon reaction.

Dr. E. C. Thrash, Atlanta, Ga.: Possibly I am not so enthusiastic over the tuberculin treatment as Dr. Durel is, but I certainly am not as agnostic as Dr. Harris. I have been working with tuberculin and watching every phase of it for a long time. I have been very highly elated at times. At other times I have felt discouraged, but taking it upon the whole it is, in a measure, a specific for tuberculosis. I have reached that conclusion, and the more I work with tuberculin the more firmly I am convinced that this is true. My experience corresponds exactly with that of Dr. Durel. I have landmarks all along the line for the past ten years, men perfectly well who were suffering from tuberculosis and who were treated with tuberculin, and today they have not a symptom of the disease. In noting the reports from the various institutions over the country at the National Association for the Study and Prevention of Tuberculosis last May, I noted that the results where tuberculin was administered have been much better in the way of producing improvements and cures than under the old regime. Of course, it has got to be given intelligently, and one must not get discouraged in its administration and think he ought to get satisfactory results in a few weeks or a few months. It should be given for three or four months, then there should be a period of rest, and then the agent administered again. Let the treatment cover a period of six months or a year if you expect to get results, not giving the vaccine continuously, but taking an occasional rest period. You get the tissues stimulated to a proper state, then by continuing too far you may get a toxic effect. You can get the chronic negative phase by the constant use of tuberculin, and the patient will improve promptly when you leave it off, and then you commence again and your improvement progresses steadily.

I have been using recently the mixed phylacogen with the tubercular phylacogen that Parke, Davis & Co. are preparing after Schafer. I have been supplied with it, and I think that with this combination in the far advanced cases of mixed infections, in the chronically infected cases, where they are not too purulent and not too septic, and there is not too much pus accumulating in the lungs, the improvement is more rapid than with vaccines and with the ordinary tuberculins we have been using for some time. I am not using phylacogen as they instruct, but once or twice a week as I would tuberculin.

Another point I want to stress is that in these purulent conditions that we often find in tuberculosis, where an enormous amount of sputum is being thrown off constantly, the patients do not improve with vaccines. They really grow worse and you produce greater toxicity with the vaccines than if you leave them off. I have three or four cases under treatment now and they do better without vaccines than they did while I was giving

them. I have had two or three cases of bronchiectasis where the tubes have dilated and are being constantly filled with pus. These cases do worse with the vaccines and phylacogen. The reason why that is so is because there is a constant enormous amount of pus being absorbed in the system and you have a constant supply of toxines that cannot be overcome by the vaccine method.

As to pneumothorax, it is but one of the various forms of treatment, and it will not cure cases of tuberculosis that it is necessary to use it in. It will improve them often and may partially arrest the progress of the disease. There is no such thing as the cure or even the complete arrest of tertiary tuberculosis. It may become quiescent, but never arrested and cured by the pneumothorax treatment or with any other method. It is not within the power of my conception to see how a lung after it has undergone ulceration and the structure broken down can be cured by any method of treatment. We may arrest that condition for a term of years, but it will return, and the patient will die sooner or later. I doubt whether it is possible to cure the second stage where you have infiltration, ulceration and breaking down of the lung tissue.

Dr. W. R. Kirk, Hendersonville, N. C.: With regard to the factors governing the circulatory changes in tuberculosis, that Dr. Morse spoke of in some of his cases, I think you have to consider not only the effect of the toxins on the vasomotor system as a whole but also the condition of the heart, weakness of the heart muscle, the condition of the blood vessel wall, while remembering the effect of the toxins upon the vessel walls themselves. Another point is the limitation of movement of the diaphragm. That has something to do with a low pressure. The limitation of movement of the diaphragm dependent upon lessened motion in the affected lung will allow blood to accumulate in the splanchnic system, thereby taking a portion out of the general circulation, which lessens the volume of blood in the surface vessels; this, of course, will give lowered tension.

If I understood Dr. Herbert rightly, he claims tuberculosis to be contagious. I do not think it should be so designated, strictly speaking. I am satisfied it is infectious, but not contagious in the sense of acutely contagious diseases, and when spoken of as contagious it should always be qualified so that the public will not misunderstand.

As to Dr. Durel's paper, I agree with him that the tuberculous individual has to always live a modified life. He is never the same individual, even after recovery, and if he would remain well this fact should be impressed upon him. He is less likely to have a relapse after he has taken tuberculin, of course, and I believe in suitable cases tuberculin does good, but it matters not what the treatment or how good the results, he is never the same individual and he has to govern his life accordingly.

In reply to Dr. Henson I will say that I did not in my paper attempt to differentiate the different types of malaria, but merely spoke of them collectively.

Dr. L. B. Morse, Hendersonville, N. C.: There is one feature that is slightly irrelevant to the matter under discussion to which I would like to call attention because of the misunderstanding which nearly everyone has in regard to it that was just spoken of by Dr. Thrash in regard to adolescence being a vulnerable age of tuberculosis. I am thoroughly cognizant of the fact that the great majority of people, not only general practitioners, but people who are working in tuberculosis, are under the impression that adolescence and early adult years are most favorable periods when people are more susceptible to tuberculosis. That is a fallacy. It is something that really ought to be corrected in the popular mind. This fallacy has crept into medical literature in this way, that with say, a thousand people dying of tuberculosis it is found that, in estimating the deaths by decades, a larger number of people die between 20 and 30 than at any other age, fewer between 30 and 40, and so on. If, however, the number of people living of a particular age is considered, statistics of which have never been compiled in America, but have been well worked out in Germany, it is found that the likelihood of contracting tuberculosis increases from the age of puberty right on up to 60 years; then from 60 to 70, despite the fewer number of people living of that age, there is for some unaccountable reason a decrease in the susceptibility to tuberculosis. I believe there are few people who realize that fact. There are a great many people because of increasing years who labor under the impression that they are less likely to contract tuberculosis, yet, as a matter of fact, they are more likely to contract it, if one remembers that there are fewer people living of advanced years.

Dr. Wallace J. Durel, New Orleans (closing the discussion on his part): It has been said that tuberculin is a specific agent. Gentlemen, tuberculin is not a specific as we speak of specifics, as anti-toxin in diphtheria. We know, as Sahli says in his last book, quoting Wolf-Eisner, that tuberculin not only attacks the toxic products, but acts in loco. It stimulates not only the formation of antibodies, but it favors direct action, phagocytic action of the leucocytes.

So far as the paper of Dr. Morse is concerned, I certainly would like every practitioner to read it. I think it is well placed, because it brings out the foundation of all treatments. I would like to classify the basic treatment of tuberculosis as the hygenic, dietetic, rest treatment and the X-ray treatment.

With reference to the susceptibility of age we must not forget the fact that statistics show up to the present time that the majority of people develop tuberculosis at the age of 21, and that tuberculosis may be of the latent form from childhood, and certainly when that individual is placed in all the life struggles he becomes more the subject of infection, and is more apt to develop tuberculosis. But a man may develop tuberculosis at any age. I have a man, 76 years of age, who is developing active miliary tuberculosis. A tuberculous individual should be careful if he does not react tuberculin. I say to tuberculous patients that once tuberculous always tuberculous, and it is better to be a coward under these circumstances than to be brave. The moment you are a coward you are careful to keep well. The moment you

are too brave you are careless and are liable to have a relapse.

So far as pneumothorax is concerned, I have not had many opportunities of applying it. If we are only able by a modified technic in the advanced cases to change our results materially it will be a good thing, and I hope those who have become skilled will simplify the technic, so that in the future it will be a valuable adjunct in the treatment of tuberculosis.

Dr. Stevens T. Harris, Highlands, N. C. (closing the discussion): I do not care to discuss these most excellent papers that have been presented on this subject, but wish only to commend them. There is one thing in regard to which I might differ with some of the authors and that is the use of tuberculin as a treatment for tuberculosis. I think my reasons for it are sound. In watching parallel results, in comparing artificial pneumothorax or compression of the lung with any other treatment, the results are so far superior and so striking and so constant that I really do not care to employ any other treatment until I find something that is superior to it. Of course, there are aids and adjuncts. Any aid in the treatment of tuberculosis should be used. All things should be used for the benefit of the patient. As to the curative effects of artificial pneumothorax, or compression of the lungs, it has been proven, and it is no longer a matter of anybody's opinion, but it is a matter of fact. Facts are the things in which I am interested. If it is tuberculin, let it be tuberculin. If it is artificial pneumothorax, let it be that. What I want to achieve is results. You employ artificial pneumothorax, and see the results are striking in every case where you can produce it, just as a dose of quinine will produce a favorable change in a case of malaria. I have never seen it fail. So far as cure of the lungs is concerned, autopsies have proven that the tuberculous lesions were perfectly healed in people who died from other diseases after having had compression of the lung. This is a matter of medical history and not a matter of **my opinion**.

In regard to the question asked by Dr. Halsey of the use of apparatus for the prevention of gas embolism, I think it is true that any needle or any form of puncturing apparatus which will produce trauma more than a cut would be less liable to cause the condition or to leave a patulous vein so that embolism would occur. The larger the needle you use the less likely you are to enter a blood vessel. There are various forms of needles used. The needle I use in the initial operation is very blunt. It has rather a tearing effect than a cutting one. We use blunt pointed probes, and we insert the needle with a probe in it, and we probe in after we insert the needle. We examine the probe to see if it has blood on it.

One of the serious questions is the prevention of the entrance by aspiration of air or gas into the circulation. I have demonstrated that gas or air can be aspirated into the circulation. This makes the problem of prevention very difficult.

There is one thing suggested to me by Dr. Henson in dicussing the diagnosis between malaria and tuberculosis, and this is in regard to the blood pressure findings. The blood pressure findings in malaria are high, while we all know in tuberculosis they are low.

THE STATUS OF CLIMATE IN PHTHISIOTHERAPY.

By Thompson Frazer, M.S., M.D.,
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Having made the diagnosis of pulmonary tuberculosis, the physician often finds it difficult to decide upon the locality where the cure shall be pursued: shall it be at home or at some climatic resort? It may be that he has to fight preconceived notions on the part of the patient's family, or perhaps, in his own mind, he is uncertain as to the relative value of "home" and of "climatic" treatment. While he knows of cures successfully accomplished amid the surroundings of the home, the number of cases whose improvement has been attributed to climatic factors is too great to be dismissed without further thought, and he is often perplexed as to whether the patient should be advised to remain at home or should be sent to some region where "cloudless climes and starry skies" prevail. It is the purpose of this paper to discuss briefly the effect of climate in tuberculosis, and to attempt to discover the various climatic factors which have influence on the disease.

The advantages of climate in the treatment of tuberculosis have been sung since the first days of phthisiotherapy and all climates, from the low, moist ones of the sea coast to the high and dry ones of the mountains, have at different times received their quota of praise. Such differences of opinion seem, at first, irreconcilable to one who has but little understanding of climate and of the results which climate is expected to bring about, but it should be noted that what we know as climate is the product of many factors, and that, moreover, extrinsic conditions—such as the presence or absence of hygienic surroundings, good food, enjoyable company, and the like—may so modify the effect of climate as to make or mar the results anticipated. So that, while definite scientific observations are not lacking on the subject of climate, they must be coupled with the results of clinical experience before they can be of general usefulness, and here it is that the personal equation of both physician and patient enter into the results achieved and make it difficult to distinguish between the effects of climate and those of associated and inseparable conditions. It is not surprising, therefore, that to one unaccustomed to consider climate as a therapeutic agent, the subject should seem hopelessly confusing. Moreover, there has been a tendency on the part of some, I am glad not to have to say of all, physicians to question the results attributable to climate; this

has at times been carried to what I consider a dangerous degree of doubt. With the realization of the possibilities of improvement in tuberculosis which lie in fresh air, good food, rest and hygienic management, administered in unfavorable climatic surroundings, there has come about a corresponding decrease in the belief in the efficacy of climate in this disease.

It should be stated at the outset that climate is not a specific for tuberculosis, and climatotherapy should take rank after the hygienic dietetic regimen above noted; neither is there found anywhere an ideal climate for tuberculosis; these observations, however, should not warrant the assertion sometimes made, that climatic influences are negligible in tuberculosis, for the wealth of clinical evidence at our disposal must convince him that hath eyes to see that climate is an important factor in the treatment of this disease, and in spite of its non-specificity, a therapeutic adjuvant not to be despised. Amrein has well said: "Undoubtedly proper care is the most important element in the treatment of tuberculous patients, and proper care in a bad climate is much better than no care in a good one. Nevertheless, no one will venture to deny that the very best of all is **'proper care in the best possible climate.'"**

Let us define what we mean by "climate." Knight says it is "the average weather conditions of a given place."[2] When we remember the part that fresh air plays in the treatment of disease, it is not claiming too much for a locality where the outdoor life may be pursued not only with tolerance, but with actual enjoyment—that it will give better results than one where the patient is hampered by weather conditions such as wind, rain, excessive heat or cold, in carrying out properly the therapeutic program. The observations of Edson on the subject of climate are so illuminating that I quote him at some length. He regards climate as "the sum total of meteorological conditions prevailing in a given region over a considerable period of time. It is the average condition of meteorological phenomena characterizing that place. The weather is the immediate state of those phenomena at a given time. It is important to have this distinction clearly in mind. The weather may be very bad—cold and windy, for example, on a given day, in a place where the average and usual conditions forming the climate are those of warm and sunny days; and even the region of generally damp and cold climate may have its warm, dry days of beautiful weather. Climate is the sum total, the average state of the weather to be expected in a given region or place over a considerable period of time." This conception makes evident the value of climate, for surely that location is to be preferred where the pleasant days are the rule and not the exception. The consumptive cannot afford to wait for the occasional pleasant day; his improvement is, at best, but slow, and his recovery depends in a large measure on his living his life in the open, and all conditions that make this easier of accomplishment must be regarded as favorable. For "an outdoor life does not mean the casual or occasional being out of doors, but implies a constant life in the open air. The measure of its efficiency is directly in proportion to the number of hours spent daily in the free air. It is not simply being out of doors for recreation, but it is the spending of the patient's time, so far as possible, in fresh, open air, not only while at work or exercise, but while at rest, and particularly during the period of sleep."[2] The consumptive, to whom the weather is a medicine, should receive it in as palatable a form as is possible.

It has been argued that a change of climate is not to be had by the majority of sufferers, and that a means of treatment more readily available to the rank and file should have first consideration. The first part of the argument is sound—undoubtedly and unfortunately—but this in no way affects the obvious truth that the sick man, with means of securing the most satisfactory conditions for regaining his health, should not be deprived of any feature which would aid in attaining this result. Those in a humbler walk of life must be content with the fresh air cure, practiced at home amid the best hygienic surroundings that their means will permit; it must be admitted, however, that even the well-to-do will not improve as rapidly at home as with the additional factor, climate.

Upon a little reflection it should be patent to everyone that the effects of climate—at times exaggerated, at other times disregarded or actually discredited—must be considerable. We have all experienced the elation of a sunshiny day and the depresion of a cloudy one, and, as Knight says: "Many of the effects of climate on the human system are well known, and there is no reason to suppose that the tuberculous patient is exempt from the ordinary laws of nature in this respect. If it is admitted that varying meteorological conditions affect metabolism, it would seem to be hardly necessary to advance any further argument in favor of change in certain tuberculous cases. There is nothing known in a tuberculous patient to make him especially immune to climatic conditions."

Without attempting to give an ideal classification of climate, nor wishing to hold a brief for

any particular type, it may be well to consider, briefly, what atmospheric and geographical features determine the nature of any given climate. Sewall[4] regards the climatic components, temperature and humidity, as the main meteorological factors to be considered; these, he says, are determined by distance from the equator, distance from the sea, and elevation above the sea; these, in turn, determine the weather conditions in any definite area. According to Barlow: "The chief elements that give character to any distinct climate are temperature, the degree of moisture (for practical purposes confined to relative humidity), the wind conditions, and the atmospheric pressure. . . . Other factors that have influence on the climate of small areas are the character of the soil, whether dry or moist, distance from or nearness to bodies of water, size and nature of forests, vegetation, density of population."[5] Climate has been divided and subdivided into so many classes and types—according to the measure in which are present the different constituents, heat, light, moisture, air purity, density and movement, water, equability and altitude—that, to one not familiar with the subject, it is very confusing.

For our purpose, it will suffice to divide climate into two general classes, according to its effect on metabolism. In one class the stimuli are moderate, but little extra demands are made on the organism and the general effect of the climate is relaxing, sedative; in the other, vital activities are stimulated, the processes of metabolism are raised to a higher degree and the production of heat materially increased.

Although the rate of heat production may be the most satisfactory means of determining metabolic activity, as Huggard claims, all individuals do not respond similarly when subjected to similar climatic conditions, a climate that is relaxing to one being stimulating to the other. According to him, "those atmospheric conditions are most stimulating in which tissue change is at its highest. High tissue change is a result, other things being equal, not of temperature alone, but of all those circumstances that help in removing heat from the body."[6] His classification is an elaboration of this theory.

For practical purposes, however, what is essential is that the individual should be placed in a climate where his vital processes are stimulated, regardless of theoretic considerations as to elevation, temperature and moisture; for the whole treatment of tuberculosis depends upon increasing the vital powers, of stimulating metabolic processes that the resistance of the body may be sufficient to overcome the bacillus which it combats. As Sewall says: "From the viewpoint of medical climatology, it would seem that the environment capable of producing the highest machine efficiency in any definite individual would be one in which the physical conditions excite a maximal mean metabolism in all the living tissues, in which every physiologic function of the body is stimulated to its full capacity of reaction."

The almost immediate improvement which follows a change must be ascribed to the change itself and not to any one climatic element. The value of a change is recognized not only in tuberculosis, but in health as well; it is known that change of scene, with pleasant company and under enjoyable conditions, may favorably influence the vegetative processes through the improved psychical state; this taking place, not only when more favorable surroundings are sought, but also when the patient is sent to a resort which does not compare with the one he has left in terms of general desirability.

The first effect of a change of climate must be regarded as being due to the psychical element; it is not apt to be of any great duration; to secure the desired results, therefore the patient should be located where the vegetative processes will be stimulated not only by the psychical condition, through the medium of pleasant surroundings and a new outlook, but where the more permanent climatic factor will play its part of stimulating the physiological function to an increased degree of reaction. Making due allowances for the question of individuality, it may be said that, for the average case, that variety of climate which most favors tissue change is one where the relative humidity is low, and which is characterized by cool—or, at least, not unpleasantly warm summers—and by cold winters. The temperature should not be so cold as to prevent the patient from leading the outdoor life with comfort, nor so warm as to put a check on the appetite and the taking of a proper amount of exercise. Cold has a beneficial effect on the body, if it be not too severe. The increased rate of heat removal demands a much greater amount of food to replace this loss; accordingly, appetite is promoted and digestion improved, while nervous energy and muscular activity are also stimulated. It must be remembered, however, that if the body does not respond to the greater demands made upon it by certain climatic conditions, the general nutrition will suffer; improvement will not be possible if the general vitality is lowered. Excessive cold, like great heat, diminishes the activity of the digestive organs, and limits as well nervous and muscular energy. The degree of humidity is important in that it inten-

sifies the chilling action of cold and the oppressive influence of heat, diminishing one's endurance of both. The conclusions of Minor, Baldwin, Solly and others, are of interest in this connection: "On the whole, in pulmonary tuberculosis, low relative humidity, with moderately low or low temperatures, is most generally suitable, and the average tuberculous patient always makes his best gains in cold, dry weather, where such conditions prevail."

Beside temperature and humidity, there are other atmospheric conditions which have a decided effect on the organism. Wind is a factor of some importance. Moderate winds, at a rate of from five to ten miles an hour, have, according to Sewall, great hygienic value, by purifying the air and acting as an agreeable physiological stimulus. This writer, in a recent paper, argues that "the temperature nerves of the skin are specific nerve organs for the appreciation of the variations of temperature and humidity and through which a wide range of metabolic actions in the body is regulated. It is through the genius of the moving air of the open that the temperature nerves find their most salutary stimulus and induce metabolisms characteristic of highest machine efficiency in the body." Strong winds, especially when accompanied by high humidity and low temperature, have such a power of removing heat from the body that they may readily produce physiological chill.

The purity of the atmosphere—its relative freedom from germs—is an integral part of a favorable climate, while the beneficent effect of the sunlight, although its action is but imperfectly understood, is universally acknowledged. The outdoor life and the sun act like a tonic to mind and body, "a nipping and an eager air" recalls a banished appetite, and vital activities are stimulated to such a degree that one might, with Gray, say of the patient:

> "The common sun, the air and skies,
> To him are opening Paradise."

Equability, once considered a desirable climatic item, is today less sought after unless the case be an advanced one, or one suffering with complications, such as would make diurnal changes of any considerable degree a tax rather than a benefit. In early cases, on the contrary, such variations may act as distinct physiological stimuli to the body.

In discussing climate, one is tempted to slight, or to leave out altogether, a factor which has caused more argumentation, perhaps, than any other climatic component. I refer, of course, to the subject of altitude. By remaining silent, one escapes the accusation of prejudice and self-interest. This is, however, no way of solving the question, and every factor which shares in the making of climate must be studied **per se**, and the results of meteorological observations compared with clinical deductions in order that we may appreciate the relative values of the various fractions which enter into the composition of climate.

Happily, this is being done; necessarily, however, there must exist radical differences of opinion. For when we contemplate the many individualities, the different stages of disease, and other variables such as the food and accommodations to be had, the presence or absence of physicians, it is but natural that the results attributable to climate or to any one element of climate, must, with difficulty, be dissociated from those due to any of the other factors. It is for these reasons that we have such a great variance of opinion on the subject of climate, and particularly of that climatic element, altitude. Thus, Flick does not consider climate as having any curative action on tuberculosis, while to Bullock high altitude is the trump card of phthisiotherapy: "High climates unquestionably afford the best single weapon against the disease." Between these extremes exist all degrees of opinion, these depending on the stage of the disease treated, the temperament of the patient, and the experience of the physician with a particular climate. The preference of some tuberculographers for one type of climate need not so readily be ascribed to partiality; it is natural for a physician to recommend those conditions among which he has had good results, and if the climatologist has been a health seeker himself, as is so often the case, it is not surprising that he regards as favorable for the treatment of tuberculosis that climate in which he himself made his recovery.

A sign of improvement to be noted is the fact that climates and altitudes are being selected with reference to the needs of the individual patient; his personality and physical condition are studied, and the individual treated, rather than the disease.

The age of the patient is of importance, according to Barlow, in the selection of the altitude. He thinks "that as a general rule patients with pulmonary tuberculosis developing between the ages of 17 and 40 should be sent to a high, dry altitude. When disease has begun after the age of 40 years, patients should be kept in lower altitudes." Children, he says, do better at the coast. Bullock, in commenting on the effect of high alti-

tude treatment, says: "I recognize but three indications for sending a patient to a lower altitude, namely, cyanosis, which is chronic and independent of cold, a high grade of emphysema causing life in a high altitude to be intolerable, and broken compensation in heart lesions. In hopelessly far advanced fever cases the patient will always be more comfortable in a low altitude, and should never have been sent to a high or distant climate in the first place."[10] It would take up too much of our time to review the opinions of the different climatotherapists on the value of altitude. Forster[11] has given us—in considerable detail—the views held by many. His own conclusion is that altitude—often considered as synonymous with climate—is of distinct value in the treatment of tuberculosis, its claim resting on a better foundation than those of climate alone.

And it does seem that the restorative powers of altitude cannot be entirely mythical, and a region which can boast of those atmospheric conditions usually regarded as of distinct benefit in tuberculosis—pure air, cool temperature, and low relative humidity—must be considered as exerting a wholesome influence. Whether or not the effects of altitude are dependent upon changes in the blood, a rise of blood pressure (as claimed by Bullock), a deepening of respiration, or to an increased heat production, the stimulation of the vital powers, with the increased metabolism which this betokens, must be regarded as desirable in combating a disease like tuberculosis, in which the contest between body and bacillus can be determined in favor of the former only when the powers of the body are keyed up to a sufficient degree. The actual elevation, whether low (below 1,000 feet), medium (between 1,000 and 3,000 feet), or high (above the latter figure), must depend on the individual; for stimulation may readily pass over into undue excitation, and a nervous patient may be rendered more nervous, and his condition aggravated rather than benefited, if the altitude be too high.

Thus it is evident that there is no ideal climate. Excessive dryness implies the presence of dust when the wind is stirring, while the presence of vegetation connotes a degree of dampness that may not be suitable. The air of a city in a climate whose salubriety is famed becomes impure according to the density of population and the number of factories, while in the country of the same region accommodations may be difficult to obtain, and medical supervision unsatisfactory. These various objections, however, can usually be overcome, and we should not have much difficulty in selecting a suitable location for the patient, for in this country we have a great variety of climate and altitude to choose from, the particular locality that is selected depending upon many factors, such as the age of the patient, his temperament, his financial responsibility, the accessibility of the resort, etc. It is important, when choosing a location, that its suitability as an all-the-year resort be borne in mind, for the invalid seldom has either the strength or the money to afford two climates, a winter and a summer one. The health conditions of the resort should be looked into in advance and the presence of a physician who understands the management of tuberculosis cases must likewise be assured.

It becomes apparent, therefore, that though topography and meteorological conditions are of importance, climatotherapy embraces more than a mere consideration of these components. For, while in the minds of many climatic treatment is most closely associated with the first of the therapeutic essentials, air, food and rest, its relation to the other two is no less important, and any conception of climatotherapy is inadequate which does not include the dietetic-hygienic regimen. For the most ideal climate is valueless, if the proper supervision of the patient be neglected. Climatic and hygienic treatment are often contrasted as if they were fundamentally different, whereas climatic treatment should be understood as including all hygienic measures; it is simply the regulation of the patient's life, plus such factors as climate can contribute.

It is this regulation of the patient's daily life which is with difficulty enforced at home. As Cornet has said: "The conditions demanded by a rational treatment of the disease are rarely satisfied in the home, even in the case of well-to-do people."[12] If the patient endeavors to keep up with those about him, his health is certain to suffer; if he seeks the cure to the best of his ability, refusing invitations which his strength (according to the views of his friends) would seem great enough to warrant him in accepting, he soon comes to be looked upon as "hipped on his health" and his psychic equilibrium is seriously disturbed. Or it may be that business obligations rather than social duties interfere with the proper undertaking of the cure, and the patient who attempts to keep up with office or shop finds himself in the condition of the king in "Hamlet:"

> "Like a man to double business bound,
> I stand in pause where I shall first begin,
> And both neglect."

These in themselves may be sufficient reasons for a trip; in other cases, however, it may be

difficult to decide whether certain disadvantages of treatment at home are not preferable to those which obtain at the resort. The progress which the disease has made, the age of the patient, the financial state and the patient himself must all be considered.

The stage of the disease is important, not only when comparing the relative values of different regions, but in determining whether the patient should be sent away at all. It is useless to expect improvement in a hopelessly far advanced case, no matter how favorable the climatic conditions might be. Much better it is for such a case to remain at home in the company of his family for the few weeks or months that remain to him. Yet such is the implicit faith (on the part of some) in the ability of climate to restore health, that often patients arrive at the resort **in articulo mortis.** When the case is an incipient one or but moderately advanced—if the patient can secure at the health resort the same advantages that he would have at home—then the climatic factor should be added, if possible. This brings up the question of the financial condition.

It is unfortunate that the providing of favorable conditions for the patient should be dependent on the financial resources of the family, yet in most instances it is this item, above all others, which will determine whether the individual shall be kept at home or sent to a more suitable region. It has been said that the very rich and the very poor are with difficulty cured of tuberculosis. The reasons are plain enough: The rich man cannot or will not give up the pleasures to which he has become accustomed; not used to denying himself anything, it is often next to impossible for him to exercise the power of self-control so necessary to successfully combat tuberculosis. The poor man, on the other hand, is unable to afford the good food and comfortable quarters which are so essential to his recovery. The early age at which the disease so commonly makes itself manifest precludes the having of a large savings account, while the cost of board and lodging, of drugs and of doctors' bills during a period of months or years are so considerable as to make impossible any real trial of the advantages of climate. Cornet said years ago: "Whenever possible, one should advise a sojourn of three or four months, one-half year, one year or more, in proportion to the severity of the condition and the means of the patient. If the tuberculosis has progressed considerably, it is proper to warn the patient that for one to three years he must devote himself to the care of his health." More recently Bullock has said: "There is no disease in which there is a prospect of recovery in which time is a more important element. After years of this work, I feel perfectly sure of my ground in stating that twelve months is a good average for an incipient case." If, then, the patient cannot afford the same degree of comforts which are to be had at home, during a sufficiently long period, the best course is for him to remain at home, and to pursue to the best of his ability the outdoor cure, with good food, and rest and exercise according to the instruction of the physician in attendance.

The age of the patient has a decided bearing on the question. A large number are, of course, young people, but the relative maturity of individuals at the same age varies greatly. If not yet "past the bounds of freakish youth," that age at which dancing, the soda water fountain and the moving picture shows are allurements not to be resisted, that age

"When Youth and Pleasure meet
To chase the glowing hours with flying feet"—

it may be necessary to consider the advisability of sending along with the patient some member of the family whose presence shall serve as a check to the excess of gaieties. Here again the additional expense involved may place climate out of the question. It is otherwise with those who have "some smack of age, some relish of the saltiness of time" about them; they may, as a rule, be safely entrusted with their own salvation.

The mental attitude of the patient towards the contemplated change should receive some attention. If he be "at war, 'twixt will and will not," it may be wiser for him not to make the change. On the other hand, a distinct improvement often follows a change of scene; that "humors turn with climes" is as true today as when Pope wrote it. The absence from the routine and worries of business is often a great factor in the amelioration of the physical, and with it, the psychical condition; sometimes, however, the breaking of family ties may develop neurasthenia, to which residence in the worst possible climate is preferable. As Edson well says: "The sunniest skies smile not to the homesick." Individualization, therefore, is the keynote of treatment.

The following sublimated extract of this paper may serve to define the status of climate in phthisiotherapy:

1. Climate is of value in the treatment of tuberculosis, although it takes rank after the hygienic-dietetic regimen.

2. Generally speaking, a stimulating climate is

desirable, and some degree of elevation beneficial in the average case.

3. People react differently to climate, one being stimulated, another depressed, by similar climatic conditions.

4. Atmospheric and meteorological conditions alone do not constitute climate, and climatotherapy must embrace the not less important factors of food, accommodations, hygiene and environment.

5. The financial state, the mental attitude of the patient, and the stage of the disease must all be taken into account before a change of climate is advised.

6. If the patient, in order to obtain the advantages of climate, is obliged to suffer for want of proper food, care, and rest, treatment at home will be more satisfactory; if he is able to afford at a resort, the comforts and the supervision which are so essential, then the added factor of climate cannot but prove of distinct value.

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A FEW SURGICAL COMPLICATIONS IN THE ABDOMEN DURING TYPHOID FEVER.*

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Since Petit and Serres, in 1811, and Bretonneau, in 1820, first clearly established the relationship between its intestinal lesions and the disease, typhoid fever has constantly grown in importance, not only to the physician, but to the surgeon as well, and as the studies of this affection have revealed the more clearly its complications and sequelae, there has imperceptibly resolved itself into a definite group, a series which may be recognized as comprising the "Surgical Complications of Typhoid Fever." Merely to list some of these—noma, gangrene from thrombosis, parotitis, the bone lesions, mastitis, laryngeal ulcerations, abscess of the liver, thyroiditis, perichondritis, muscular abscesses, perforations of the hollow viscera—will indicate the necessity of selective action if only brief discussion be indulged in in this paper.

I have chosen a trio, the importance of which I observed first when Resident Surgeon of the Johns Hopkins Hospital. Perforations of the ileum, typhoid appendicitis, and cholecystitis—notable for their frequency but more notable from their ability to swell the mortality list of typhoid by a large number of deaths, avoidable, not only by curative measures upon the immediate cause of death, but also by preventative measures which prohibit entirely the appearance of these conditions.

A glance at typhoid cases on the autopsy table will often very forcibly present to us the greatest drawback to the elimination of these preventable deaths—inability to diagnose the presence of the fatal complication. To be able to reason in our diagnosis we must go back a step. Without definite knowledge of the pathology we cannot reason. We must be able to see in our mind's eye the basis of our complications.

What occurs from the inception of the disease? Briefly, the typhoid bacilli, after becoming active in the intestine, multiply rapidly during the incubation period, and choose, as their seat of action and point of entry, the lymphoid follicles, either solitary or conglomerate, found particularly in the lower ileum. We must ignore here the unusual types in which the intestinal follicles are seem-

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ingly intact, and deal with the typical only. We must follow the changes in one of these follicles, keeping in mind that from the base to the serous coat and peritoneal cavity is but a fraction of a centimetre. For the time being we must consider the disease purely from a surgical standpoint, as an ulcerative condition of the intestinal wall, which will, with extension of the process to, and the destruction of, the serous coat, mean peritonitis and death.

What is the nature of the local process? During the first ten days of the pyrexial period the follicles are swollen, congested and reddened. Microscopically, the picture of acute inflammation exists and the bacilli are found lodged even in the muscular coats underlying the base of the follicles. Towards the end of the second week necrosis sets in, brought on both by the direct action of the bacilli and by the anaemia due to the blocking of the small nutrient blood vessels. As the sloughs are cast off ulcers are formed. The underlying connective tissue between the muscular coats and the subserous tissue, is inflamed, and intestinal peritoneum over the indurated patches is reddened, congested and lustreless. As we pass into the third week the ulcerative process involves the small blood vessels. The result is hemorrhage from the bowels. The muscular coats, the subserous coat, and finally the delicate peritoneal veil are attacked and destroyed, and intestinal contents escape into the free peritoneal cavity.

Do the pathological conditions differ in the appendix? At first sight, No. Large numbers of lymph follicles exist in this organ. The bacilli are active here and the same conditions should exist. Wherein lies the difference? In many, or most, incidences conditions are similar. Congestion, necrosis, ulceration, and perforation occur in the same manner. In a much smaller number we may be confronted with the closure of the whole or a portion of the appendicular canal by the involvment and swelling of one of the submucous follicles which may act as a plug. The result is an isolated closed section of appendix with no escape for the retained secretions. This rapidly forms a perfect culture media for the various bacteria and the typical pathological and clinical picture of acute appendicitis exists, only indirectly due to a typhoid lesion.

Finally, typhoid bacilli seem to have a predilection for the gall bladder. Whether by lymphatics or blood vessels, by ascending infection through the ducts, or by way of the portal system and liver, the bacillary invasion, either typhoid, or colon, or streptococcus, or others, is frequent, and we have to deal with the simple catarrhal inflammation, the suppurative and the ulcero-perforative cholecystitis. We must mention but not discuss the complications—cholangitis, hepatic abscess, perforation of the ducts, inflammation of the portal vein, and later, following the theory of Lartigan, biliary calculi. With the simple inflammation comes the inflammatory occlusion of the cystic duct, the isolation of the gall bladder, the activity of the bacilli in the stagnant fluid, the distention and weakening of the walls, the necrosis, due to pressure or to infective processes or to circulatory disturbances, and finally, the perforation and the flooding of the peritoneal cavity with infected bile.

Unfortunately we must delve momentarily into statistics. According to Osler, 6 per cent of the 2,000 deaths in the Munich epidemic were due to perforation. Strumpfell increases the percentage to 9 in his Leipsic Clinic. In 13,000 deaths in the French and German hospitals, collected by Dieulefoy, 10 per cent died of perforation, while Murchison, in something less than 1,000 cases dying in the English hospitals, significantly shows that 19 per cent (nearly 1 out of 5) died of intestinal perforation.

We may judge the frequency of perforative typhoid appendicitis by its comparison with intestinal perforations. Fitz shows about 3 per cent of perforations to be located in the appendix. Osler, over 17 per cent in his Johns Hopkins hospital series. Rolleston, about 3 per cent, and Nacke, about 11 per cent. The incidence of non-perforative appendicitis is more difficult to enumerate. The signs may be mild enough to resemble the signs over an ulcerated ileum. It is often difficult to differentiate. Of four typhoid appendices which I have had occasion to remove, three were acutely inflamed, red, angry and edematous, while one was perforated. With these facts as our basis we cannot ignore this condition.

The incidence of cholecystitis is comparatively frequent. Often it is unrecognized. The suppurative and perforative cases are of great interest to us—the simpler inflammations only in that they may lead to the more severe types. Only occasionally does cholecystitis end in perforation, but two cases upon which I have operated in the last eighteen months, showing acutely perforated gall bladders with peritoneal cavities steeped in infected bile, have impressed forcibly upon me the necessity of guarding our prognosis carefully in any given case of cholecystitis. Of a series of 115 cases collected by Camac, 25, or 18 per cent, had perforated, but it must not be understood that the percentage of perforation is so great in anything but a selected series of cases.

What do we gain from these statistics? Broadly speaking, the knowledge that these complications may occur in almost any case under observation, and that in every small number of cases dying during the course of typhoid, one death has been directly due, not to the fever's toxaemia, but to one of these three surgical conditions, frequently unrecognized, but more frequently unaided by surgical intervention.

What may we do to prevent these deaths? How may we recognize their appearance during the course of the fever and early enough to avoid the fatal issue? When we realize that in flooding the peritoneal cavity with intestinal contents or infected bile lies the predominating danger, we can draw by inference the conclusion that action must be either preventative or curative, and, if the latter, it must be immediate. A question of minutes is essential. What are the most ideal conditions under which we may work? Co-operation and a thorough comprehension of the possibility and frequency of these complications, a close acquaintance with the normal typhoid abdomen, and a very early recognition of the slightest variation from normal in the abdominal signs, on the physician's side; on the surgeon's side, a familiarity with the normal typhoid abdomen, and an ability to "sense" the earliest signs of these complications, especially when blurred by the toxaemia of the disease itself.

What, then, is the limit possible for local and general signs and symptoms in typhoid referable to the disease itself free from complications? We must view the picture in the third or fourth week. Subjectively, there may be some slight abdominal pain. Objectively, abdominal distention to various degrees, slightly diminished respiratory movements in the lower abdomen, abdominal tenderness, slight but accentuated in the R. I. F., slight stiffening of the lower right rectus, slight diminution of the liver dullness, a pulse of 120, a temperature of 104 degrees, and a leucopenia—signs and symptoms, with the exception of the leucopenia, similar to those recognized as indicating a mild peritoneal inflammation in the R. I. F.

It is not easy to discern the difficulties with which we are confronted since we are bearing in mind that the earliest symptoms of perforation are due to the localized peritonitis usually situated in the R. I. F. also. Where do our points of differentiation lie? We must consider every factor. The diagnosis may not only be helped by the lesser aids to diagnosis, but may have to be wholly based upon these.

Firstly, we must remember that a good percentage (Goldschamm, 25 per cent; Murchison, 17 per cent) of perforations are preceded by hemorrhage, and the appearance of this symptom must at least hint at the severity of the ulcerative process. Again, marked meteorism must be classed as an inciting factor, and may lead to the splitting of the weakened coats. What must suggest the actual onset of the peritonitis? Again we must argue from our pathology. A big rent, the escape of a large quantity of intestinal contents into the peritoneal cavity, and a sudden, violent onset of the peritoneal symptoms must supervene. A pin-hole perforation—and the symptoms must be tempered. In both, the sudden onset of abdominal pain, located most frequently in the R. I. F., often severe enough to cause the patient to cry out, is enough to cause us to focus every known diagnostic aid upon this patient until the diagnosis is established or refuted.

Consider our patient responsive. We must watch carefully for a diminution in the respiratory movements of the abdomen and an increasing stiffness of the right rectus. Increasing tenderness in the R. I. F., diminishing liver dullness and increasing distention must be looked for. The temperature must be closely watched. Often a sudden drop will mean perforation, especially if the hypothermia persists. The drop in hemorrhage is more transient, usually lasting a few hours. The leucocytes must be counted frequently and the pulse carefully noted. Vomiting, hiccough, nausea—any of these may be strongly suggestive. Systematic comparison must be indulged in to its fullest degree. Hence we are impressed with the vital value of the daily routine examination of the abdomen, especially during the third and fourth week of the disease, so that when danger is once signalled we may appreciate exactly what difference there is in each and every symptom and sign with which we have been dealing.

Suppose our patient to be irresponsive and irrational and the leakage slight. Not only have we eliminated the most clear-cut warning signal—the sudden pain at onset—but all of the signs and symptoms will be clouded by the toxic haze. Meteorism may be present before the perforation. So may a diminished liver dullness. The pulse may have been rapid and the temperature variable. None of the signs after the perforation occurs may be definite. The lowered resistance may not permit the leucocytes to rise. The pulse and temperature may not change materially. Or the temperature may drop suddenly or rise suddenly. It must not be depended upon alone. We cannot wait for dulling in the flanks. If it indicates abdominal fluid it will be too late, as a rule.

Frequently it does not indicate fluid in the peritoneal cavity at all. Increased response on very deep pressure in the R. I. F. may be our only hint in an otherwise irresponsive patient. We must practice elimination. Has the patient voided? Or, is the tenderness due to abscess of the abdominal wall? Examine carefully for increased rigidity in the low right rectus. Compare with the left rectus. Have the respiratory movements diminished anywhere? Is there any suggestion of hiccough or vomiting? Or, again, our signal may be diminishing liver dullness and increasing tenderness per rectum and a rising leucocytosis. We must miss nothing. Every combination of symptoms and signs of peritonitis seems possible and almost any positive sign may be absent. We must compare our local and general findings with those of yesterday. What changes are there? What influence has the toxaemia on the general features and how much does it blanket the local findings? Even the patient's hand continually seeking the R. I. F. and a persistent flexing of the thigh may influence our decision strongly. Until we are certain perforation does NOT exist no hour should pass without a thorough examination. A few hours may decide for action. A few hours more may make action futile.

Upon what sign can we depend in arriving at our conclusion? Locally, we must look for increasing tenderness. Secondly, and especially if the patient be irresponsive, a tightening of the lower rectus. Pain and its location in the R. I. F. if complained of. Upon these three we may have to depend. Next, diminution of the liver dullness. Then, diminishing respiratory movements and meteorism. Rectal tenderness must not be ignored, and dullness in the R. I. F. may perhaps aid us at a somewhat later period. We must follow the general symptoms along with our local conditions. What has the temperature done? A quick drop is very suggestive, if we bear in mind its possibility in hemorrhage alone. Perhaps the temperature may show no preliminary drop, but rise immediately. The pulse will often go up, and this may be viewed with suspicion. The leucocytes may be of great aid. They must be counted frequently—as often as every hour in doubtful cases. A steady rise is extremely suggestive when taken in connection with other symptoms of a local nature. Vomiting, hiccough and nausea are of value. It must be borne in mind that these symptoms, however, may be an accompaniment of the fever itself or may possibly be due to an ulcerated condition of the gastric mucosa.

Upon any and all signs we must lay stress, and when we have weighed each sign carefully, both absolutely and comparatively, and have just as carefully reckoned upon the blurring of all these symptoms by the toxaemia of the fever itself, we must be able to remove every doubt in our minds as to the possibility of perforation before delaying operation for more certain signs, or else we must be reconciled to the fact that we may be signing the patient's death warrant. We must be familiar with the typhoid abdomen in order that we need not wait for the Hippocratic facies before making the diagnosis. We must realize that some of our most sought for signs may fail us, and we must keep in mind that an early diagnosis is the one which will lead to the preserving of the patient.

Where the typhoid lesions are responsible for the appendicitis directly we can expect no differentiating points from low ileal perforation. Perhaps somewhat more tenderness before the perforation might be expected. In the other type in which the typhoid lesion is only indirectly causing the appendicitis, we will see a more active clinical demonstration, and all signs, especially the pain, tenderness and fever, will be exaggerated. This may closely resemble actual perforation at the onset of the attack, but the absence of temperature drop is according to some authorities a very important diagnostic point in favor of appendicitis.

The difficulties here are not so much as regards the indications for operation as they are for the differentiating of the milder typhoid appendicitis from a perforation with mild symptoms, or the more severe true appendicitis from the perforations with severe symptoms. With these signs we must operate and not infrequently our finer diagnosis will not be made until the abdomen is opened. Once perforated, the signs will be similar in all and resemble the signs already described for ileal perforation.

Fewer difficulties confront us with an inflammatory condition in the gall-bladder. The typhoid abdomen is clear in this region and slight involvement of the gall-bladder may be fairly easily recognized. Tenderness, pain, a mass, and muscle rigidity—all or some of these may make the diagnosis for us. Mass, only, was present in the one case I have operated in the course of the disease. Leucocytosis keeps accompaniment with the inflammation and jaundice in some cases may be present. Mild degrees are frequent; perforation only occasional. We cannot always separate the symptoms of cholangitis from gall bladder infection—the chill, intermittent fever, prostration, and jaundice. Nor must we forget that perforation may evidence itself, as in both cases that I operated, by sudden abdominal pain, not in the gall

CASE	AGE SEX	CONDITION AT OPERATION	DIAGNOSIS	DAY OF DISEASE	OPERATION	PERITONITIS	SLEUM	APPENDIX	GALL BLADDER	RESULT	CAUSE OF DEATH	TIME OF DEATH
1. "I"	M. 40.	COLLAPSE	INTESTINAL PERFORATION	3'd.	ISOLATION OF ULCERATED LOOP. PERFORATION NOT FOUND	GENERAL	RED, INDURATED. COVERED WITH FIBRIN.	NORMAL	NORMAL	DIED	PERITONITIS	3 hrs p.o.
2. "H"	M. 25.	GOOD	"	16.	SUTURE OF PERFORATION.	MODERATE	INDURATE PATCHES. PIN-POINT PERFORATION.	"	DISTENDED	DIED.	EXTRUSION OF INTESTINES BY COUGHING	7 DAYS.
3. "Y"	M. 36.	FAIR	"	17.	"	GENERAL.	ULCERATED. SMALL PERFORATION	"	NORMAL	RECOVERED		
4. "H"	M. 17.	"	"	16.	"	MODERATE. LOCAL.	RED. ULCERATED. LARGE PERFORATION.	"	"	RECOVERED		
5. "B"	M. 21.	VERY POOR.	"	37	"	GENERAL.	INDURATED RED, PATCHES PERFORATED	"	"	DIED.	PERITONITIS	FEW HOURS.
6. "L"	F. 25.	GOOD.	"	33.	APPENDECTOMY.	NONE	TYPHOIDAL.	RED, EDEMATOUS, INFLAMED	"	RECOVERED		
7. "J"	M. 15.	FAIR	"	37.	"	SPREADING	"	ANGRY, RED, EDEMATOUS	DISTENDED	RECOVERED		
8. "S"	F. 14.	"	"	19.	"	NONE	"	"	NORMAL	RECOVERED		
9. "M"	M. 34.	POOR.	"	?	"	GENERAL.	"	EDEMATOUS, ANGRY, GANGRENOUS PERFORATED	"	DIED	PERITONITIS	12 HOURS.
10. "S"	M. 15.	GOOD.	INT. PERF. EMPYEMYTIS	37.	DRAINAGE GALL BLADDER. APPENDECTOMY.	LOCAL	"	MARKEDLY INFLAMED.	SWOLLEN INFLAMED.	RECOVERED		

(Page 3)

bladder region, but elsewhere, and quickly localizing in the R. I. F. In toxic patients we meet with the difficulties with which we have been confronted in the other complications, but it is safe to say that since our symptoms are more pronounced with this complication, the result will be that the difficulties met with are, comparatively speaking, greatly diminished.

We must see what the results of these complications are during their course with no operative interference. Ileal perforations are nearly always fatal. A few cases have shown limiting adhesions or sealed perforations, but it is fair to state that to all intents and purposes every ileal perforation is fatal. The utter lack of adhesions found in cases at operation is borne out by the rarity with which walling off of the inflammatory products is found at autopsy in perforative cases.

Appendicitis is less dangerous. It may subside. But there is a large percentage of perforations located in the appendix. We cannot say in any given cases but that there are grave dangers if this process is allowed to proceed.

Finally cholecystitis is the least harmful of these complications. Yet we must not ignore the effect of the frequently accompanying cholangitis with its complications on a patient with an almost crucial typhoid toxaemia. Again, perforations associated with the flooding of the peritoneal cavity may bring the patient to a quick ending. Often the inflammatory condition, however, will subside under little or no treatment, and this must be borne in mind should one be called upon to decide for or against in this class of cases.

Statistics must be resorted to briefly. Bagley collected 209 cases of intestinal perforation, of which 42 per cent (nearly half) were saved by operation. It is perhaps fairer to take the statistics of one man. Woolsey with twenty-one cases saved 33 per cent, while Hays, with twenty-eight cases, saved 32 per cent. Other authors report very much smaller statistics series consisting of two or three cases or more, and their percentage of cure is of less value. Of my own cases 40 per cent were saved. Statistics in the appendix cases are more unreliable. Of the four cases upon which I operated, three lived, but it is a fair question whether removing an appendix before it is perforated is "saving" a patient. Would the process go on to perforation? This is impossible to answer, except in definite cases. One of mine was perforated and two others were, conservatively speaking, in a dangerous state. Considering the frequency with which perforations are found in this organ after death, it is fair to assume that the danger of not removing an acutely inflamed appendix is more than imaginary. Cholecystitis is at least dangerous untreated. Statistics upon the operated cases are meagre, as this is a rare procedure. In one case I found a large distended gall bladder and drained this. The patient did excellently. By this process we eliminate the possibility of perforation and give free drainage to the bladder and ducts. This must especially be kept in mind in the cases of distended gall bladders with toxic symptoms. In the average case, however, operation should not be performed until all possible chances for the subsidence of this condition have been allowed. Once perforation has occurred the dangers to the patient increase one hundred fold. Operation must be immediate.

There are a few factors which must be mentioned but not discussed here. Principal among these is the importance of diminishing the interval elapsing between the first danger signal and the definite diagnosis, and that between the diagnosis and the operation. The smaller these intervals the higher the percentage of those saved by operation will be. Even one hour may turn the balance. Again, what is the effect of opening a typhoid abdomen with negative findings? If done speedily and with just as little handling of the intestines as is necessary and with the proper anesthetic, which seems to me to be definitely gas and oxygen, there is little derogatory influence on the course of the disease. No new surgical principles are involved, but one peculiar condition is met with. There seems to be a definite and notable absence of the usual tendency towards the formation of adhesions. Hence our closures must be firm. Personally through and through silver wire sutures have proven most satisfactory.

In conclusion, in a resume as brief as this it has been necessary to ignore everything but the typical and many phases have been left untouched. If we may put typhoid on a true pathological and surgical basis and view it from this standpoint and look upon it as a "potential abdominal calamity," and if we may familiarize ourselves with the signs and symptoms of the normal typhoid adbomen and of each separate case, and if we realize with speedy operation under proper conditions that there need be little fear for the safety of our patient, and if we make as our criterion for operation the absence of a certainty that perforation does not exist rather than a certainty that it does exist, and finally, if we realize the fatal issue that is involved in delay, it is not possibe, but certain, that the many cases of typhoid dying from perforation entirely unrecognized will be reduced to a minimum and the cases of recognized perforation will enter more and more into their true surgical

sphere and be eliminated from the known causes of death in typhoid fever.

"Series of Abdominal Complications of Typhoid Fever Operated by the Author Within the Last Two Years."

DISCUSSION.

Dr. J. Hugh Carter, Memphis, Tenn.—To my mind, this is one of the most important subjects that has been under discussion here today, and it is in these cases that we have so many complications. As the doctor confined his paper to the abdomen, I will not go outside.

The most frequent complication in typhoid fever, in my experience, has been the gall bladder. With that I have had a little experience in the last year. One, an acute case of appendicitis with rupture. Diagnosis was made and we operated upon the patient in three hours after the symptoms came on. This patient had had a mild attack of typhoid fever, apparently, and was about well. Temperature about 100, and normal in the morning. The complication occurred about the twenty-fourth day of the disease. Operated upon the patient, made drainaage, and patient had a very nice recovery.

The other, a case of empyemia, following typhoid fever. The patient had been up a few days and free of fever about ten days. Was taken with chills and pains in that region, and diagnosis was made and patient operated upon and drainage made, and it was a stone. This case was reported to the Tri-State Medical Association a few years ago.

Another case: The doctor said, "I have a case of gall-bladder trouble or empyemia." Made incision and found gall bladder ruptured, following a violent attack of typhoid fever.

So it behooves us to be careful and watch our patient and bear in mind that these things may happen at any moment, and we should examine each day the abdomen of the patient. Of course if the patient has no distention and very little tenderness, it is hard to make a correct diagnosis.

I believe this is one of the most important subjects we will have before this section. I am glad to have heard the paper. I thank you.

Dr. F. Webb Griffith, Asheville, N. C.—I enjoyed Dr. Remsen's paper, and I wish he would give us the rest of it.

Paradoxical as it may seem, I think that those who go in too frequently and often unnecessarily, will get the best results. If you wait until the indications are perfectly clear, it will, in many cases, be too late to do good.

Go in quickly and get out quickly. Have everything ready and don't let it be over thirty seconds after the patient is asleep before the incision is made. On the other hand, we must not sacrifice thoroughness for speed. Usually there is only one perforation, but if we simply close that perforation and get out, we may overlook another area close by which is almost ready to perforate, and which a few seconds would suffice to close over. Usually the perforation is in the ileum, but if it is not found there a systematic search of the whole lower bowel should be made. I recall one operaton where the operator was unable to find the perforation for a long time, and finally located it in the sigmoid, showing the necessity of examining the large bowel.

When, instead of a perforation, an acute typhoid appendicitis is found, the operation is just as necessary.

Dr. James B. Parramore, Jacksonville, Fla.—I think especial attention should be called to the importance of a leucocyte count as an aid in the diagnosis of typhoid fever, and to determine whether typhoid perforation has or has not occurred. As soon as the symptoms of typhoid perforation have occurred, I think that a leucocyte count should be made, and then every hour, as the doctor brought out. But I think too few of us follow that rule, and lots of times if that rule was followed the patients would have the benefit of the doubt and be operated on sooner. Lots of times we put off the operation until symptoms or signs are more marked, and then there has been a great deal of valuable time lost. I think from the cases I have seen in the hospitals where they made leucocyte counts, better results were obtained.

Dr. Joseph Graham, Durham, N. C.—I think, Mr. Chairman, it is a great pity that this paper should not have been read before the medical side of our Association. That is where it is really needed. Having lived in Philadelphia where typhoid fever was frequently prevalent, I have seen in the hands of the profession of Philadelphia many of these cases of typhoid perforation, typhoid appendix and typhoid cholecystitis.

I should say that I saw many more cases of typhoid cholecystitis than of appendicitis, and more cases of typhoid appendicitis than of typhoid perforation.

The greatest difficulty I saw was in the diagnosis of typhoid cholecystitis. Medical men are inclined to look upon that as a relapse of the typhoid fever, and I have really seen more confusion and more cases confused in which the case was typhoid cholecystitis than of perforation.

One point in regard to the prognosis. Where so much emphasis was made by Price, of Philadelphia, that in typhoid cholecystitis, the gall-bladder was much more liable to perforation than in any other type of inflammation of the gall-bladder. I have had a few cases of typhoid cholecystitis. Simple drainage was made, which relieved the situation and the patient recovered. I have seen a few cases of typhoid appendix. I have seen no case that I operated upon for supposed appendicitis that later had typhoid that did not get well, in which the appendix symptoms came in the beginning of the typhoid fever. I have seen a few cases of cholecystitis develop in the early part of the typhoid. They usually develop in the latter part. If I had a patient that had typhoid fever, that had severe pain in the belly that required two doses of morphine to relieve it, I would go in and see what the trouble was, regardless of the leucocyte count.

I wish to call special attention to one method of dealing with typhoid perforation. I have had experience in two cases in which I converted typhoid perforations into enterostomies instead of closing it, put a drainage tube through the perforation and sutured it to the abdominal wall. We

attached some importance to it, for this reason: It drains the toxic material and relieves the tension in that bowel, so that you cannot have the danger of secondary perforations which sometimes occur.

Dr. Remsen closes.—In regard to Dr. Graham's remarks, I have seen two cases in which the perforations were utilized as enterostomies and the results were excellent. The reason for suturing, however, in cases where this procedure is possible, is that the intestine will be intact and the wound clean, whereas in the event of any enterostomy there must be a complementary operation to close this opening, and there is immediate danger of soiling the wound enough to cause this to give way.

As to the value of leucocytosis, I think we cannot depend too much on this in the majority of cases, as there is great likelihood of the existence of a resistance so lowered, that the leucocyte count will be of no assistance whatever. It must be looked on as a fairly important aid, but not as a certain accompaniment by any means of all perforations.

I have had somewhat the same experience in regard to operating on a case for appendicitis and finding the signs of typhoid infection as indicated by the glandular and intestinal involvement peculiar to this disease.

I think the question of searching the whole intestinal tract, as suggested by Dr. Griffith, a very important one. However, if we find a perforation in the ileum and are able to suture this, and if we are able to view the nearby loops, I think that it would be inadvisable to search throughout the whole tract in the presence of the infection, thus standing a chance of spreading the infection throughout the peritoneal cavity

The case referred to showed gas and infected fluid on opening the peritoneal cavity. We searched the ileum from top to bottom and could find no perforation, but on continuing the search through to the large intestine a perforation was finally found in the descending colon. This shows the importance of continuing the search (of course taking into account the general condition of the patient) when we find no perforation in the small bowel.

Concering the condition referred to by the doctor, we must resort to pulling the loop up into the wound and isolating it by means of drainage. Resection is too severe for a patient in poor general condition, but by the method of isolation we are protecting our patient from any dangers if the bowel subsequently perforates in the isolated section, as the intestinal contents will be discharged through the wound.

Question: What do you mean by isolation of a loop?

Dr. Remsen: Merely lifting the loop up between the borders of the wound away from its natural position and surrounding it by drains so that should another perforation occur the intestinal contents would drain out onto the skin rather than into the peritoneal cavity. The loop is not out upon the abdominal wall, but merely between the wound edges.

THE SURGICAL IMPORTANCE OF THE BREAST.*

By E. Denegre Martin, M.D.,
New Orleans, La.

Few will deny that in this day of rapid development, with a tendency to give way to the new and forsake the old, much of the good—nay, of the best—is overlooked or forgotten. In the eager desire to keep pace with the times, for fear of lagging behind the procession and being labeled antique, much energy is exerted in the wrong direction and ofttimes to the misfortune of the patient. Some surgeon conceives a new idea, either from his own mind or from that of another, and for fear that the same suggestion might emanate from another source, it is prematurely given to the profession so elaborately described as to technic, that the essential point, the end result, is forgotten, and should such a suggestion originate with a man of known surgical ability, the next few months will record hundreds of cases operated upon, even before the author himself has discovered that the new procedure is a mistake. In consideration of these facts I feel justified in trespassing upon your time for the few moments allotted me, and if I can impress one physician sufficiently to save one poor woman from the sufferings associated with cancer of the breast, a disease in many instances preventable, I have no apology to offer.

If one-tenth of the time and labor expended in the elaborate operations devised for the cure of cancer had been devoted to its prevention, more women would be alive today to sing our praises. I have often been remined of an incident which occurred when I was a boy. We had a neighboring farmer who had been greatly annoyed by a pig, and he had been put to considerable trouble in building hog-proof fences to save his garden and field. He came to my father one day, complaining bitterly of his misfortune and the amount of time and energy he had expended in trying to save his crop, and wanted my father to tell him some way out of the trouble. He was advised to find the pig and kill it, which he did. After several years experience in trying to cure cancer of the breast by the most extensive operations devised by surgical skill, I began hunting for and killing the pig; and let me assure you that in thirty-two cases, where I found and removed neoplasms, the patients are still alive,

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some operated upon as far back as 1895. A few of these I am confident would not be here today if I had not discovered and removed the growths while still benign. It is more important that we prevent disease than attempt to cure it. The physician who is satisfied with a superficial examination of his patient is lacking in his duty. The time has come when a most thorough examination should be made and it is astonishing how often one is rewarded for his pains.

There is another important duty which devolves upon us, and that is the instruction of patients as to the care of the breasts. The expectant mother or nursing woman should be taught how to care for the nipples, for infection through a fissured nipple will not only lead to abscess and sometimes complete destruction of the gland, but will leave scars to light up at some future time into inoperable carcinomata. For the protection and preparation of the nipple for the nursing infant I have found nothing better than a suggestion taken from a note in a journal many years ago. The nipple is macerated with lanolin, rubbed in with the thumb and fingers at bed time and removed with warm water, soap and a very soft toothbrush the next morning. The nipples are a little sensitive at first, but soon become tolerant and in the course of a few weeks are soft and tough. This treatment should be instituted at least six weeks before confinement. I not only used it myself for years when doing an obstetrical practice, but have had others use it with excellent results; in fact I can recall but one fissured nipple after using this method as a routine practice.

Fissured nipples are always painful and should be regarded as a possible seat of infection. They should be kept thoroughly cleansed by bathing them, especially after nursing, with a boric or sterile solution, and covered with a mild antiseptic ointment. Balsam Peru I have found an excellent dressing. A shield should always be used.

Of equal importance is prevention of caking of the breast, for here, too, an operation may be necessary, and any trauma to this gland is always a seat of danger in the future. In these conditions when the breasts are swollen and painful and even when an abscess seems inevitable, I have frequently been able to relieve the pain and swelling and in many cases abort an abscess by using a preparation containing one part of tincture of opium, two parts aqua ammonia, and five parts of camphor. This is rubbed gently over the inflamed surface and rarely fails to give relief. The practice of puncturing abscesses should always be condemned. If an abscess of any size is to be drained, a free incision should be made at the base of the gland and drained with gauze. If patients are subjected to more than one operation they will rebel. Neoplasms, or even large, benign tumors, can be removed as suggested by Collins by making a curved incision under the breast, following the line in the skin, lift the breast and remove the tumor; when replaced there is no scar to disfigure the breast or to come in contact with the clothing. I have in this way removed tumors ranging in size from a marble to that of an orange. I firmly believe that trauma plays an important role in cancer; this in my experience is borne out by the number occurring in negro women, who seldom protect their breasts with corsets while working. Constant friction against a neoplasm, or an old scar, I believe a menace.

Many women will submit more readily to a pelvic examination than to examination of the breast; this is due to the educational work of the gynaecologist, who in his thirst for new achievements has left no stone unturned; unfortunately his field has been too limited. Cases have been reported where gynecological operations have been done on women with advanced carcinoma of the breast without the knowledge of the operator; there should be no excuse for this. If the gynecologist feels that this is beyond his domain, he should at least, for his patient's sake, extend his field of inspection.

I am certain that such an oversight has never occurred to any surgeon here today, but I am one of those who believe that what has happened in the past is liable to be repeated in the future. Do not misunderstand me to say, however, that when you have examined a woman's breast and found a tumor, you have done your full duty. A further examination of the abdominal viscera may reveal another growth of the same character, possibly carcinoma of the uterus, contra-indicating operation upon the breast. I use the word contra-indicate advisedly. With the introduction of the Wertheim operation for cancer of the uterus, no case would seem too far advanced for surgical interference. My experience leads me to think otherwise. I have long since reached the conclusion that when a Halstead operation seems indicated, no operation should be performed, and I am fast coming to the same conclusion about the Wertheim. Have you ever stopped to consider the anatomy of the breast, its five layers of lymphatics, both superficial and deep, communicating either directly or indirectly with the entire lymphatic system of the body? If you have, you can readily realize the hopeless efforts at any

attempt to check the inroads of cancer if once it has broken through the bounds of safety.

In my experience of more than one hundred and fifty cases of carcinoma of the breast upon which I have operated, three-fourths being upon colored women, the latter already malignant when operated upon, I am not able today to point out more than four of these who have lived over a period of more than six years (to keep track of them is an impossibility), and only twelve whites; here the percentage is larger because they were seen earlier. Every week we turn away from our clinics cases too far advanced for even temporary relief. What is the lesson to be learned from this?

The lesson, gentlemen, I am trying now and hope to succeed in impressing upon you, is that the female breast has an important place in surgery and should be treated with more consideration, not only on account of its occasional usefulness, but as well on account of its being one of the most fruitful sources of danger. Statistics vary greatly, running from 30 to 85 per cent of cures. The surgeon who picks his cases will of necessity get the best result, but the benefit of a chance should always be given to the patient, even if it means but a short prolongation of life. The mortality from operations is less than 2 per cent; mine, with 50 per cent of advanced cases, is less than 1 per cent. These statistics are improving every day, so far as cures are concerned. Still, the prevalence of cancer is on the increase, and we can and must reduce it.

DISCUSSION.

Dr. Perry, Jacksonville, Fla.—Gentlemen, I have the pleasure of introducing to you, Dr. Bryan, the newly-elected chairman. (Applause.)

Dr. John M. Wilson, Mobile, Ala.—Mr. Chairman, I don't remember having enjoyed anything quite so much as the reading of that paper on cancer of the breast, and the point that struck me as being so important is the careful examination on the part of not only the general surgeon, but of the gynecologist, in looking into his cases very carefully.

Now, I happen to know of a case or two where a gynecological operation was done, where there was cancer of the breast existing at the same time, and, of course, as we all know, another point of importance is the early operation on those cases and the complete eradication of the glands of the axilla.

This cancer question is, indeed, a very important one, and I consider it one of the burning questions of the day.

Dr. Simpson—I would like to know if any member present has ever seen a metastasis in the pectoral muscle. I know some surgeons remove the fascia covering the pectoral muscle and turn the muscle into the axilla to prevent edema of the arm. I should like to know if any one present has ever had a case where they could definitely demonstrate an extension into the muscle itself.

Dr. Stuart McGuire, Richmond, Va.—Dr. Martin's paper was a clear one, and the practical point he made was an important one. I fear in the discussion we are creating confusion. We are talking about malignant tumors of the breast, and his paper was on benign tumors.

Dr. Martin impressed very forcibly the necessity of removing a benign tumor as soon as it was discovered. This is the teaching of all surgeons, but in practice the course is not followed as invariably as it should be. Dr. Martin's paper is calculated to do good and the general practitioner should be made to appreciate the importance of examining breasts carefully whenever opportunity offers and advising operation if any growth be found.

Personally, I do not like Warren's plastic operation for the removal of benign tumors from the breast. I have used it in a good many cases and in three instances have had to do a second operation because the first attempt at removal was not complete. I now make an incision directly over the tumor, the cut radiating from the nipple like the spoke of a wheel does from the hub. I do not think in these cases we should sacrifice thoroughness to cosmetic results.

I have spoken, not because I had anything to say, but because I did not think Dr. Martin's paper ought to be passed by without discussion, and because I wanted to emphasize the point he made.

I have spoken with some difficulty and hesitation, because after the banquet of last night, I am not in very good condition. In fact, I feel very much like Billy Baxter, who, after a "wet night," took a seat at the breakfast table and said: "Waiter, bring me a glass of water and a toothpick; and, waiter, please look pleasant, for I am feeling very badly."

Dr. Martin closes—This is not intended to be a treatise on the cure of carcinomas, but merely the early detection of tumors, whether benign or malignant. I mentioned these cases because I happened to discover them early.

I want to lay special stress upon the method of drainage in cases of abscess. If the abscess is of any size you will find that unless you make a good, free incision, it will not heal before the abscess is thoroughly well.

It has been my misfortune to have many cases referred to me that were inoperable by men who had watched them for some time, treating them by rubbing them and doing everything else, until they were beyond possible cure.

Let us remember that every tumor of the breast is a menace to life. I also believe trauma one of the factors. My observation shows me that we have a large number of negro women working in the corn and cane fields who do not wear corsets, and it is from these that a large percentage of my cases comes. I think we should be a little more systematic in our examinations and feel that when we have completed an examination we have left nothing undone.

As to the Doctor's question: No; I have never

seen recurrence in the muscle stump, and I think when it occurs it is because the lymphatics have not been thoroughly removed.

GRAPE SEEDS IN A PELVIC ABSCESS.

By Charles H. Cargile, M.D.,
Bentonville, Arkansas.

C. J., male; white; age 11 years. Mother, though possessed of good family history, died of tuberculosis. Father healthy, with good family history. Patient, while he had never been strong, had never had any serious illness. Absence of cough or other evidence of pulmonary disease. For several years he had had occasional attacks of what were called indigestion, characterized by epigastric pains, and vomiting. Twice, because of added symptoms—slight fever, abdominal soreness and rigidity, possibly more marked in the right iliac fossa, the writer had expressed suspicion of appendicitis to his grandmother, with whom he lived. When the first visit was made on the morning of October 10th, 1911, he had been ill about twelve or fifteen hours, with one of his usual attacks. The usual treatment of calomel and soda, by the family, had failed to relieve him, as it had done in former attacks. Notwithstanding frequent enemas during the next several days, no satisfactory bowel action was secured. Vomiting, his most marked symptom at this time, continued several days, gradually growing less frequent. It was never stercoral. During the first few hours there was pain in the epigastrium, after which he had none until the fifth day, when it was slight and in the hypogastrium. The little tenderness present was diffuse; abdominal muscles were everywhere rigid, and the thighs flexed; neither dullness nor distention during the first few days. Considering how serious were the intra-abdominal conditions, as revealed by operation, it is surprising how little variation from normal characterized his temperature, pulse, respiration, facies, etc., except during the acute gastric dilatation to be mentioned below. Thus continued his illness for a few days without diagnosis, but not without suspicion of appendicitis, intussusception and other conditions. On the fourth day an induration was palpable just above the pubis and to the right of the median line. This rapidly enlarged downward and toward the left, filling the pelvis and extending toward the umbilicus by the time of operation on the tenth day. Fluctuation through the rectum was felt on the sixth day and on the following one in the hypogastrium. It was not the writer's fault that notwithstanding these plain indications, an operation was not done until the tenth day. An incision low in the right iliac fossa opened into the free peritoneal cavity, instead of through adhesions into the abscess, as was hoped for. The abscess filled the pelvis and lower abdomen, and made exploration difficult and inadvisable. The little that was risked showed the absence of the appendix as well as disease, as far as could be determined by touch in the right iliac fossa. In the mid-line the abscess wall was adherent to the parietes. Hoping that it could be reached and drained through this area and without entering the free peritoneal cavity, the incision was closed and so protected by rubber tissue and collodion that it healed without infection from the two subsequent incisions. A second incision to the left of the linea alba also opened into the free peritoneal cavity, and showed that the adhesion felt through the former incision was only a narrow vertical strip beneath the linea alba. After protecting the peritoneal cavity with gauze the abscess was incised, much offensive pus escaping. Along with it were several grape seeds. Others were removed by light sponging; and subsequently and at different times more, making a total of twenty-three. The last one was supposed to have caused the continuation of a sinus for several weeks, as the latter closed very quickly after the escape of the former. One seed was seen in the feces. It is probable that search throughout his illness would have revealed others. Following this operation the patient improved in all respects until the third day, when acute gastric dilatation supervened, the symptom complex of which was by far the most serious of his entire illness. It yielded promptly to lavage. Soon after this, nothwithstanding there was good drainage from the abscess, his symptoms indicated there was something wrong. Physical signs showed another abscess, this time in the sub-hepatic region. Strange as it may seem, this was absolutely without pain or tenderness, and this in part accounts for its not having been detected earlier. This second abscess was incised, and drained, as was the former, with split rubber tubes. It was estimated that it contained about a pint of offensive pus, but no grape seeds. It was sub-hepatic with the liver and gall-bladder for its superior wall. Exploration of this cavity with the finger revealed a funnel shaped pocket, which pointed downward toward the right iliac fossa. His final recovery was good, and since then his health has been better than ever before.

Investigation in the library of the surgeon general's office at Washington fails to reveal a similar case, that is, not only of grape or other fruit

seeds, but of any similar bodies having escaped from the intestinal tract into the abdomen. The nearest to it is the one in which 122 small shot escaped through the appendix.

Definite information as to how long since he had eaten the grapes was not obtainable.

Several thoughts are suggested by this case. What was the course of the seeds from the time of their exit from the alimentary canal? Did they, like the shot, lodge in the appendix, and escape through its wall? or possibly at some other point? The latter is not very tenable, for the reason that it is not easy to imagine any part of the intestinal tract other than the appendix except the sigmoul that could collect and retain so many seeds long enough to cause perforation by ulceration or pressure necrosis. This view is corroborated by the fact that so frequently various foreign bodies have been found lodged in it. Furthermore, the perforation of the latter. The further fact that whereas the patient, as above stated, had had frequent mild attacks of what were believed to be appendicitis, he has not had one in the eighteen months since the operation. Is it probable that the seeds were all this while in the appendix and causing them? If it be true that they thus escaped, why was the right iliac fossa free from adhesions or other evidences of disease, as has been above stated? Could it have been that they, by reason of their weight, readily descended to a lower level, where they caused the first abscess? Let it be remembered that an exploration with the index finger through the first incision, the one in the right iliac fossa, failed to find the appendix, or evidence of disease, except in the direction of the pelvic abscess. It was supposed at the time that the appendix was abnormally high, and beyond the reach of the finger through the small incision, which was made lower than usual to secure better drainage of the pelvis. This presumption as to the high location of the appendix is strengthened by the fact that the second abscess with a sinus pointing toward the appendix, was sub-hepatic instead of iliac. The theory that the seeds after passing out of the appendix descended is somewhat confirmed by the absence of seeds in the second abscess. It is possible, but not probable, that under the circumstances and conditions of this case that the subhepatic abscess may have been the result of infection through the lymphatics or the blood stream. Also that a faulty technique of the first operation may have caused it.

Reverting to what has been said about the very little pain and tenderness throughout his illness, and especially their total absence from the second abscess, and by way of accounting for it, it is thought worthy of calling attention to a fact that may explain this phenomenon by way of heredity. The writer attended the mother of the patient in her two parturitions and saw her pass through these without pain. Otherwise they were normal. During the first stage she said she experienced a feeling of contraction unaccompanied by pain, absolutely so. He became interested in this unusual phenomenon and anxiously looked forward to the second. This, too, was the same as regards pain. During the extreme dilatation of the vulva of a small woman by a normal head, her expulsive efforts were strong, but without pain, only a feeling of fullness and desire to expel the foetus. In the time of a severe contraction and effort at expulsion, I questioned her about it and was assured that there was no suffering. All of this was confirmed by her facies, actions, etc. In no other respect was she abnormal, her health being good, and the sense of touch about the vulva and vagina being normal.

Is it probable that the patient inherited from his mother an idiosyncrasy as regards pain?

ECLAMPSIA AND ITS TREATMENT.*

By A. Y. Linville.
Winston Salem, N. C.

DEFINITION.

By the term, eclampsia, puerperal eclampsia, or puerperal convulsion is meant, in modern medicine, an acute morbid condition, making its advent during pregnancy, labor or the puerperal state, which is characterized by a series of tonic and clonic convulsions, affecting first the voluntary and then the involuntary muscles, accompanied by complete loss of consciousness and coma, which may terminate in recovery or death.

FREQUENCY.

Eclampsia is most frequent in the later month of pregnancy, less frequent in labor, and still less after delivery, and occurs according to different authorities —one in 250—500 or 0.2 to 0.4 per cent, or about one per cent of all cases of albuminuria or one-fourth per cent of all pregnancies.

SYMPTOMS.

These may be classified into two classes. Those of the pre-eclamptic state, and those of the attack. Some writers make three divisions, namely:

First: Invasion.
Second—Tonic and clonic convulsions.
Third: Coma.

The symptoms of the prodromal stage are of great importance and meaning to the experienced obstetri-

*Read before Forsythe County Medical Society, April 30, 1912.

cian, and are as true a token of impending danger as a cloud before a thunder shower. These are headache, dizziness, disturbance of vision, epigastric distress and nervous disturbances and a feeling of general debility. They may all appear and pass away and no attack follow, if they occur some days before labor. If they appear during early labor and return with each pain, the face flushed and cyanotic, eyes staring and pupils change from pin point to wide dilation with a twitching of muscles of face and a bounding pulse and high arterial tension, some mental disturbance and probably drawing of the head to one side, a convulsion is inevitable without quick interference to, in some way, lower the arterial tension and relieve labor pains and nervous excitement.

If allowed to go on the convulsion may begin by repetition of above symptoms and be confined to head, neck and chest, arms or spine in opisthotonic curve or culminate in a sudden convulsion of all parts at once. This picture once seen is horrible and never to be forgotten. There is cessation of respiration, a champing of mouth, and tongue protruding and frothy; if respiration is continued it is irregular and noisy, as though suffocation and death were imminent.

This passes on for several minutes and breathing becomes established and coma follows for probably fifteen to forty minutes, and then a deep sleep follows for an invariable short period, from which she may awake apparently rational and talk and ask what time it is or what has happened.

If delivery of fœtus should have occurred during this attack, which sometimes happens, with considerable hemorrhage, the attacks will generally not be repeated; but if not, a second one generally follows quite soon and is repeated until uterus is emptied or patient succumbs.

THE EFFECT UPON FOETUS AND LABOR.

The former is often quickly and seriously affected, one attack often producing death to it and in other cases it will survive several attacks, and some think convulsions are very apt to stop if fœtus dies in first attack or continue in case it does not. This has not as yet been fully established as a fact.

The kidneys are involved in about two-thirds of these cases, and albuminuria, which is usually present, and in some cases up to eighty-five per cent, rapidly increases after each convulsion up to 2.5 per cent, or more, with red and white corpuscles, sugar and casts, showing all symptoms of congestion of kidney.

ETIOLOGY.

The last word has not been spoken on this question, but this much may be stated with positiveness: That eclampsia does not always depend upon albuminuria and kidney changes; as proof of this albumen is not found at all in some cases of convulsions or first convulsion. The theory of Frerichs, that it was uremic; and of Petroff, that it was ammonia or potash, has not been positively proven by modern investigators.

Fleischer and others have been led to believe that the most probable and logical cause of eclampsia was to be found in the extractive materials present in the urine and blood, and prove this by experiments of artificially inoculating animals with this same material, producing convulsions very similar to eclampsia.

Others say it is an intoxication by coagulation produced by ferments which originate in the placenta, thereby producing thrombosis of the vessels. This has later been denied, though not proven, and still has able supporters. All are agreed that toxemia is the prime cause, and any interference with the permeability of the kidney filter will produce it.

PREDISPOSING AND EXCITING CAUSES.

All acute or chronic inflammatory diseases of kidneys which are prevented from normal elimination by pressure from uterus, as in pregnancy or abdominal tumors. Those most liable from pregnancy, are the very young or old primiparas by reason of the rigidity of the muscles and small abdominal space.

Exciting causes are sudden partial or complete suppression of urine, constipation, very rapid and severe labor pains, with rigid unyielding os, prolonged and exhausting labors, profound emotions, such as are often produced by nurse or friend by mere suggestion or expression of fear that she will have convulsions, by the psychologic effect.

PATHOLOGY.

This is at present as in the past very obscure. The post-mortem changes are anemia of all organs in general, with slight congestion of the meninges of brains and cord. Ante-mortem changes are a diminished urinary toxicity and increased amounts of poisons in blood.

DIAGNOSIS.

At first sight this appears to be simple, and truly is so if you exclude four other kinds of convulsive seizures sometimes found in puerpera. They are: First, epilepsy; second, hysteria; third, apoplexy and meningitis.

These can be easily and quickly differentiated and excluded by a careful survey of the patient, together with the history of previous health and attacks.

The mode of differentiating these I will not mention, as you are all familiar with that. If not,

I refer you to any good book on practice of obstetrics, as Jewett, which will give it in detail.

PROGNOSIS.

I would say this is bad, generally speaking, though **not always so. The maternal mortality at the present date of scientific treatment is 30 per cent, and that of child 50 per cent.**

The pregnant woman who is suffering from toxemia and albuminuria and whose daily amount of urine is diminishing is in great danger of an attack of eclampsia. The dangers become less as the converse takes place, of course, just in the same proportion, and just at this time is our greatest opportunity and duty to do a great deal of good to patient by stimulating the emunctories.

The earlier in pregnancy the pre-eclamptic symptoms or attack appear, the worse the prognosis, and especially when the attacks are repeated early and more severe and consciousness is not restored between the attacks, or they have been allowed to run on for some time before aid is secured.

TREATMENT.

Granting the contention which, if not absolutely correct, is at least the best theory of etiology we have today, that eclampsia is the result of toxemia, then the treatment would naturally be divided into two divisions and seem simple; that is, prophylactic and curative. Then the former, by all odds, would be the more important, since the seizures are considered preventable by the best authorities at home and abroad if treated properly. So, then, to accomplish this we must have the patient in charge for some time before parturition and impress upon her the importance of symptoms or conditions which are generally manifested in due time and order, which if recognized and treated will avoid a great catastrophe. This is not always our privilege in a large and especially country practice, where you are called to the case just in time to witness the first convulsion and often later, after several have accrued, *to do something!*

The symptoms preceding an eclamptic attack are rapid pulse with high arterial tension, loss of appetite with gastric distress, headache, dizziness, lassitude with visual and mental disturbances, a feeling of distress and mental anguish as though something indescribable was about to befall the patient, with a gradual or rapid diminution of all the excretions of body, especially urine and feces.

Examination of blood gives positive proof of high contamination of poisons. The urine offers the best clinical index to the pre-eclamptic state. The daily increase in amount is considered a valuable symptom in kidney failure.

Albuminuria is not always present, or, if so, is not positive proof that eclampsia will be unavoidable, as it is often not found at all before and after the first attacks of eclampsia.

Urea is not to be inferred as the sole or prime cause either, for this can be artificially introduced into blood and produce no bad symptoms. Bouchard has found that bile has nine times the toxic power of urea, and he also states that the poison found in the blood arises from:

(1) Food, especially nitrogenous, as muscle or red meats containing potassium salts.
(2) Bile.
(3) Putrefaction in the intestines and absorption of same.
(4) Toxic materials constantly being produced by the metabolism of all cells of the body and of fœtal tissue also. And, then, in twin and triple pregnancies the damages and frequences are greatly increased.

The treatment of this pre-eclamptic state would be:
(I) Reduce the amount of nitrogenous food to a minimum.
(II) Limit the production and absorption of toxic materials in the intestines and tissue by improving the action of (1) bowels, (2) kidneys, (3) liver, (4) skin, (5) lungs.
(III) Remove the source of fœtal metabolism and peripheral irritation in the uterus by emptying it, if not relieved by the former plan of treatment.

For I, a milk diet exclusively will readily fill the place of farinaceous foods, to which, if after a short period, this becomes *unpleasant* to patient there can be added fish and fresh white meats.

For II, plain or mineral water freely, with light exercise and massage.

For the fermentation a daily dose of colocynth and aloes at bedtime, followed by a saline in the morning. And to insure liver action, omit the above one night in each week and give a dose of calomel and sodium instead.

For the skin, glonoin in full doses, either alone or in combination with hot baths and packs, wrapping in blankets, and hot water bottles will promptly eliminate and relieve.

This in general, as I have touched on the principal prophylactics, will be sufficient to refresh your memory, and there is no one set rule or treatment that will give universal satisfaction; each case must be studied to find the law for each, as there are many other things that can be done beside the few I have mentioned, and probably with better effect in your hands.

THE CURATIVE TREATMENT.

In the presence of an eclamptic attack we face a desperate condition; the various latest statistics from all countries place the maternal mortality at 25 to 35 per cent, and is likely to remain so until the pathology of eclampsia is better understood. Experience does not permit of just any one line of

treatment. Many recover with comparatively no treatment, and others die under the most complete and skillful treatment. Each case must be managed according to indications present.

For combined treatment three indications are offered:

1st. Control the convulsions.

2nd. Empty the uterus under deep anesthesia by as rapid a process as possible with the minimum injury to the patient.

3rd. Eliminate the poisons which cause the convulsion from the system at earliest possible moment.

Although these three divisions are named in order of their importance, yet they may all be carried out at the same time. Some accept the first and third plan and wait for the second until more convenient time, but I think they can and should all be worked together.

The control of convulsions can be done in five ways: Chloroform, morphia, veratrum viride, chloral, alone or with bromide of potassium, or venesection.

Chloroform, veratrum and chloral in the order named are my personal preference. I have, as many others have also, dropped the use of morphia entirely, as it, to my mind, locks up the gateways of elimination, prolongs coma and interferes with the plans of elimination. Chloroform is of all the most reliable and harmless, of course, where there is no serious heart trouble.

Veratrum is second, for three reasons: It relieves arterial tension, which is most always present, reduces temperature and produces diaphoresis, thereby giving a great start on treatment. You can give it hypodermically if patient is unconscious, or you want a quick effect, 10 to 15 minims of fluid extract, and repeat on half dose if necessary in one hour to keep pulse down to 60, and convulsions are not likely to re-occur with this pulse. Of course you will keep the patient in recumbent position while under its influence.

Now, the fifth, the best, quickest and surest way, to my mind, is venesection. This, I think, should, with possibly a few exceptions, be done at the earliest moment when called in the midst of a convulsion, and carried to a point that will reduce the pulse and relieve the congested and cyanotic condition of the brain and face, not being limited by amount of blood taken, but by effects. And, to my mind, it would be very beneficial, even in the pre-eclamptic state, in those plethoric cases where elimination is slow and there is a tendency to heart symptoms, etc.

Transfusion in cases of convulsions and where a great quantity of blood had been taken would be the more scientific and rational treatment.

Now, as to emptying the uterus. There are some French and German, as well as American authors, who still advise waiting for normal dilatation of the os before interfering. This, to my mind, as to many others, is altogether unnecessary and amounts to almost criminal neglect. At the present time, under complete anesthesia, there will not be sufficient irritation by dilating the os to produce a convulsion, and that seems to be all the objection. Of course, where you, for some good reason, cannot push the chloroform, then you must wait or take the other plan. You will agree that the damage is practically over, in fully 90 per cent of the cases, as soon as the uterus is emptied, of eclampsia being repeated, and in those where it is repeated it is much lighter.

There is every practical, as well as rational, scientific reason to bear out the treatment of promptly emptying the uterus. Then again the expectant or palliative plan means almost certain death to the child and also to fully one-third of the mothers.

There are, of course, some exceptional cases in puerpera where eclampsia comes on before there is any dilatation at all, that would require a different treatment, either to wait for dilatation, incise cervix or perform Cæsarean section, and there can be no rule or preference laid down for these cases. I would simply say it altogether depends on the conditions present, and the location, whether in some dark country home miles away from hospital and help, or in a city full of able assistants easily and quickly obtained.

After the uterus is emptied brisk catharsis is given and often before, if the patient is conscious and can swallow. I would give 10 grains calomel and soda every two hours for three doses and follow with one to two ounces of epsom salts. If she is unconscious I would give ol. tiglii, one drop, dropped well back on tongue and repeated if necessary. Elaterium is also a very great help if given in sufficient doses. Keep patient warm and give light, nutritious diet and stimulate kidneys slightly, and you will most likely be rewarded by recovery.

CAESAREAN SECTION.*

By John M. Wilson, M.D.
Mobile, Ala.

I know of no operation that has been more unjustly looked on with fear than has abdominal Cæsarean section, preference usually being given to craniotomy or other methods by which a living child may be destroyed. It is not the Cæsarean section

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that should be feared, but it is those cases that have been infected by repeated attempts at delivery with forceps, or that have been infected with the unclean hands of an examiner. It makes no difference how skillful an operation one may perform, using the most brilliant technique, if said case has been infected as stated above, or has been in long labor causing the mother to be worn out from a continuous effort to bring about a normal labor, there can only be given a forlorn hope for the saving of either mother or child. Hence we see the great importance of those members of the profession doing obstetrical practice using as much asepsis as the surgeon, to whom these cases are brought for operation after nature has failed to perform her part and when it is deemed advisable to do a Cæsarean operation.

In view of the greatly improved results which now obtain after Cæsarean section, and owing to its superiority over other methods, the operation covers a wider field of usefulness now than it did in former times, depending, of course, upon the condition of the patient and the ability of the operator to procure the proper facilities for the performance of a major surgical operation. This operation was practiced long before the time of aseptic surgery. It was used from the earliest times up until about the sixteenth century, being performed on pregnant women dying at or near full term, with the hope of delivering a living child. Usually the death of mother and child are synchronous, but there have been cases where living children were delivered for an hour, and even longer, after the death of the mother.

The first authentic case of Cæsarean section on a living woman was performed by Trautman in Europe in 1610. The woman lived twenty-five days following the operation. The mortality of Cæsarean section, as well as all other abdominal operations, was appalling until the Listerian era. Since this great man's time the mortality from this operation has steadily decreased.

Credit must be given Sanger, as well as Porro, for their great work in this particular field of surgery. Porro in 1876 advised doing a supra-vaginal hysterectomy after delivering the child and suspending the cervical stump in the lower part of the abdominal wound. This procedure greatly lessened the chances of post-operative hemorrhage and sepsis. Sanger in 1882 saw the necessity of employing uterine sutures to close the uterine wound, and so advocated their use. Before this time the physiological contractions of the uterus were relied upon to coapt the incised organ and control hemorrhage.

The most common indication for Cæsarean section is a contracted pelvis, but there may be other causes, such as uterine myoma, located at the lower part of the uterus, and ovarian cyst with adhesion, cancerous or undilatable cervix. This operation may be employed in some cases of placenta previa, as well as in some cases of eclampsia with a very rigid cervix. The success of Cæsarean section depends greatly upon the time when it is performed, the best results being obtained in those cases that can be given the proper preparation and operated on just before or at the beginning of labor. Those cases give the worst results that have been in labor some time and have had repeated examinations made on them, which are likely to produce, as stated before, an exhausted patient and an infected uterus. Here we see the importance of the obstetrician making an early diagnosis of any pelvic deformity, or obstruction of any kind, that might call for a Cæsarean section. In this way we have the chance of properly preparing our patient for a major abdominal operation, and in such cases the results are brilliant.

By such early diagnosis and the proper preparation of our patient, many a child, as well as mother, may be saved.

In regard to the operative technique I have always used the following:

The patient is prepared as for any other abdominal operation; an incision is made beginning at the symphysis and extending well up through the umbilicus, large enough to completely deliver the uterus. The uterus is delivered and the edges of the abdominal wound are brought together and clamped with forceps so as to prevent, as far as possible, escape of amniotic fluid into the peritoneal cavity. This, however, makes but very little difference if the fluid has not been infected from forceps or other attempts at delivery, because it is aseptic in its normal state. It is almost impossible to prevent entirely the entrance of this fluid into the cavity, however, every effort should be made, especially when there is any suspicion of an infected amniotic fluid. The uterus should be completely surrounded by hot towels. After thus surrounding the uterus carefully with towels, an incision parallel with the abdominal incision is made in it, the baby is grasped by the feet and delivered, the cord being cut between clamps. I have used the transverse incision in the uterus with just as good results, but see no advantage over the longitudinal. In fact, one seems to be as good as the other. Several suture materials have been recommended to close the uterus with, such as silk, linen and catgut, and all have served the purpose satisfactorily. Personally I prefer chromicized catgut No. 2. They should be placed deep through

the muscular part of the uterus and close together. A second row of continuous suture may be used to cover this, but is not absolutely essential. It is never necessary to apply an elastic ligature around the neck of the uterus to control hemorrhage, and it should not be done because it is liable to cause atony of the uterus, and thus predispose to post-operative hemorrhage. Neither is it necessary to have an assistant make pressure on the uterine arteries. This operation permits of further conceptions, and hence is called the conservative operation in contra-distinction to the Porro operation, which is radical in its results. The Porro operation should be performed when there is suspicion of an infected uterus, or when it is myomatous. The cervical stump should be buried subperitoneally, just as doing a hysterectomy for a fibroid tumor. In cases where the cervix is cancerous a complete hysterectomy should, of course, be performed, removing the entire cervix. The abdomen is closed just the same as after any other abdominal section. Some authorities recommend in the after treatment the hypodermatic injection of full doses of ergot following the conservative operation. This, however, seems to be unnecessary.

In this great age of aseptic surgery the mortality of Cæsarean section, formerly so high, is now very little, if any, greater than abdominal surgery of any other kind. So let us encourage this operation and let us strive to lessen puerperal sepsis and work for a more aseptic obstetrical technique.

DISCUSSION.

Dr. Foster.—In regard to the infection of the hand while attempting to deliver with forceps. We speak of the choice time for operation in other cases, in other surgical procedures, and yet, in the operation for Cæsarean section, we have present an indication for operation which has been in existence for months. We have a contracted pelvis, which has not come up to an emergency proceeding at the time of childbirth, but is within the power of the physician, if he takes the precaution to examine it beforehand.

The pelvimeter is so simple that it should be employed by every physician and every physician who owns a stethoscope should also own a pelvimeter. Within two or three hours he can become familiar with its use and make out the obstructions which bar the delivery of the child through its natural canal.

I would like to empasize that every physician should own a pelvimeter, just as regularly as he owns a stethoscope, because almost every physician does obstetrics. We should teach our patients to come to us during the time of pregnancy and allow us to study their cases, and not await a hurried call in the night to come to deliver a woman who has not been examined and who has not had a diagnosis made. I have refused cases that had not called me before the time of delivery because, if you do that, you will educate your patients. The attitude of the patient in this matter is entirely within your own control, and you can so exercise your teaching power as to make the patient come under your control in this matter. It is only a matter of your teaching.

Dr. Sanders—This question of Cæsarean section is, to my mind, a very live one. I am very glad indeed that Dr. Wilson brought this question before us and stressed the point of operation before the rupture of the membrane, before any dilatation of the cervix, for it is almost a safe procedure where we have time to make our examinations and diagnose and deliberate what we shall do; then, I think, it is a very wise thing to do.

Another fact, it is sometimes wise to do in cases of eclampsia. I feel that not nearly so many cases of eclampsia are delivered in this way as should be, and before infection has been carried in. I see no reason why we should not do this abdominal section instead of the vaginal section or the course with dilatation and delivery.

One point in reference to the technique of the operation, in which I differ with him just a little bit, and that is about the making of the incision and delivering the uterus entirely out of the abdomen. The incision below the umbilicus, in my opinion, is not as practical as the high incision. I have done a few of those, and I find that there is a possibility of adhesions between the incisions in the face of the uterus and the low abdominal incision. If we make a short incision four inches in length above the umbilicus, apply hot packs around to protect the peritoneal cavity and make an incision in the uterus sufficiently large to deliver the fetus, the uterus immediately contracts, and there is not so much handling of viscera and shock to patient. I prefer a high incision to the low incision.

Dr. J. S. Turberville, Century, Fla.—Mr. Chairman: I think that the suggestion the gentleman made yesterday is a very good one—that perhaps we can save some of these labor cases that have been manipulated. Some few months ago a woman was brought to me who had been in labor seventy-two hours. Her abdomen was opened and in this case I feared an infection. I took a sterile gauze bandage and soaked it in iodine and when I delivered the child the placenta and the membranes I packed the uterus until it was full. This woman had fever when brought and for several days afterward, but the wound healed by primary intention and she got up and got along all right.

I shall not hesitate, since hearing Dr. Crisler's paper on yesterday, to pour the iodine into the uterus, because I practically did it then, because the gauze bandage was dripping when I put it in. Lots of times you get tags of membrane left. You think you get them all, but you do not, and if you remove the packing in forty-eight hours you pull out a lot of that old debris that perhaps is a factor in the sepsis.

Dr. Isidore Cohn, New Orleans.—Dr. Simpson advocated the high in preference to the low incision. I think we ought to be a little bit careful about adopting the high incision, because of the fact that many of these cases which come to operation have been manipulated by men who were not particularly careful, and operated upon by another man. And we should remember that the lymphatics in the upper segment of the abdomen are very much more active

than the lymphatics in the lower abdomen; the proof being that we have a lower average mortality in pelvic surgery than in high abdominal surgery. Therefore, unless the man has handled the case from beginning to end, and unless he knows who has been handling it, and knows him mighty well, he better not adopt the high incision in preference to the low incision.

Dr. Wilson closes.—Mr. Chairman: I appreciate deeply the free discussion of this subject.

Now, in regard to the examination which Dr. Foster brought out; that is, indeed, to my mind, the most important point of this subject, because, if you could get a case where the indications for abdominal Cæsarean section were present before there is any infection in the uterus coming through the vaginal canal, I believe that you are just as sure of success as you can expect from any abdominal section.

Now, I will say that the mere cleansing of the hands and running them through antiseptics is not sufficient for the proper performance of an antiseptic vaginal examination. In the first place the hands should be cleaned and sterilized and gloves, in my opinion, should always be used, and, secondly, the vulva of the patient should as well be sterilized. While the vaginal canal may not contain so many dangerous bacteria, yet we know the vulva does.

Again, in taking charge of the patients, the question of educating the patients is a very important point. Every woman should be placed in the hands of an obstetrician as soon as she becomes pregnant, and, as the doctor said, every obstetrician should understand thoroughly the use of the pelvimeter.

And the question of operating early, as I just told you, before the membrane break, is a good point.

In regard to those cases of eclampsia, while, personally, I have never done a Cæsarean section for eclampsia, yet I believe it would be well, in a great many of those cases, especially where the cervix was very rigid, making other means of delivery impractical.

In regard to the delivery of the uterus and the high incision, I have, in all cases that I have operated upon, delivered the uterus in toto. I make an incision, beginning a little below the ensiform cartilage and extending down to the symphysis, the umbilicus being the medium point and deliver the uterus entirely, then have an assistant bring the edges of the abdominal wound together, clamp this with forceps and completely surround the uterus with hot towels. As I stated, the presence of amniotic fluid in the peritoneal cavity is of small consequence, provided there is no suspicion of infection.

The idea suggested by Dr. Turberville, I have not had any experience with that.

I did not hear the gentleman's paper on iodine yesterday, but I do know from a surgical standpoint, that iodine is almost indispensable, hence I think the point is well taken. I thank you, gentlemen, for your discussion of this paper.

Since reading the above paper before the Southern Medical Association at Jacksonville, Dr. Wilson reports the following case of Cæsarean section for eclampsia:

Young woman, seventeen years of age. Had not been under the care of any physician since she became pregnant. I was called to see this patient, and found her having violent convulsions and found that it was a full-term pregnancy, and the patient thoroughly uremic. She was dreadfully swollen and would have a convulsion about every thirty minutes. Her temperature was normal and the pulse was rapid and of very high tension. Tincture veratrum in thirty-drop doses was used hypodermically, but this did not seem to thoroughly control the convulsions, and notwithstanding the teachings of some of our best authorities, morphine was given, which acted favorably. Operation was advised and accepted. Abdominal Cæsarean section was performed. The mother made a nice recovery and she is now nursing her baby. The patient had no more convulsions. Spartein sulphate in two-grain doses was given hypodermatically every four hours following the operation. The pulse came down to about normal and the patient's temperature never went above 100 degrees after the operation.

INTRANASAL DEFORMITIES, WITH THEIR ATTENDANT SEQUELAE.*

By C. B. Wylie, M.D.,
Chattanooga, Tenn.

This subject is a large one if gone into in detail, but as the time allotted to me is limited, I will be able to touch upon but a few points which seem to me to be of the greatest importance in connection with this subject.

The causes of intranasal deformities have been discussed by a number of eminent men, and their conclusions vary so much that I wish to briefly state a few of them.

Among those who have given this subject a great deal of study are Morgagni, Trendelenburg and Freeman, Jarvis, Schaus and Welcker, Bosworth and Talbot. I will here briefly summarize their views.

Morgagni has given as his belief that the overdevelopment of the vomer, which resulted in the crowding upward against the descending perpendicular plate of the ethmoid, caused lateral deflection by its continued development.

Trendelenburg and Freeman, after extensive observation, give as their opinion the cause of septal deformities the Gothic arch of the hard palate crowding together the vomer and the perpendicular plate of the ethmoid, resulting in deflections.

Jarvis' conclusions are that such conditions are due chiefly to heredity.

Schaus and Welcker advance the hypothesis of an abnormal development of the facial bones.

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Bosworth claims that traumatism is the chief cause of deflections.

Talbot is of the opinion that malformations of the septum are due to neuroses or stigmata of degeneracy causing an irregular development of the facial bones. He believes that pigeon chest, adenoids and deformed nasal septa are mostly due to neurotic influences which arrest development of some parts, while in others it produces an increase of development.

The opinions of Morgagni, Trendelenburg and Freeman, Jarvis, Schaus and Welcker are all well covered by that of Talbot.

Bosworth's argument in favor of traumatism as the chief cause of septal deflections deserves more than passing consideration. He evidently does not mean that traumatism is immediately followed by intranasal deformities, but that it produces a low grade of inflammation, chronic in its nature, which causes an overgrowth of cartilage and bone which may manifest itself a considerable length of time after the traumatism had been sustained.

I am of the belief that faulty adjustment of forceps during an instrumental delivery could produce in later years such a condition as this, although it is an accepted fact that deformities of this nature are rarely manifested under the age of seven years. I am convinced that traumatism during the period of adolescence can produce not only a deformity of the triangular cartilage, but also that of the perpendicular plate of the ethmoid and vomer. After the puberal period, trauma of the nose would scarcely produce more than a deflection of the cartilaginous portion of the septum. Another condition which I believe to be responsible for some septal deflections, and which has not been mentioned by the eminent observers who have been quoted, is that resulting from hypertrophy of the inferior or middle turbinated bone, either pressing against the septum itself or so deflecting the current of air passing through the nasal cavity as to cause the septum to be crowded to one side.

Aside from the question of traumatism and enlarged turbinated bones, which undoubtedly, in many cases, are responsible for these deformities, I believe that Talbot offers the most rational explanation of this question that has yet been offered. He does not specify the over-development of a particular bone, nor does he believe the failure of the palatine arch to descend as the cause of deflections of the septum, but, on the other hand, if they be present, are evident signs of neuroses of degeneracy.

In conclusion, I will summarize the etiology of intranasal deformities as follows, in the order of their importance:

(1) Neuroses or stigmata of degeneracy, which causes either an arrest of or an excessive development of the bones of the face, including the nose, one of the expressions of the neuroses being deformed septa.

(2) Traumatism, producing a low grade of chronic inflammation, resulting in abnormal development of the cartilage or bones of the septum.

(3) Enlarged turbinated bones, which produce, either by pressure or deflection in the current of air, producing a deformity more or less extensive.

Intranasal deformities are of importance only in proportion to the obstruction to respiration, drainage or ventilation which they produce.

Anterior or cartilaginous deflections, unless extreme, while they may interfere somewhat with respiration, do not to any marked degree prevent ventilating and drainage. The most frequent deflection of the cartilaginous portion is the over-development of the anterior portion of the septum or columnar cartilage.

The osseous deflections of the septum are of much more serious consequence, and may consist of a bony ridge or crest along the anterior superior margin of the vomer, running backward and upward, and usually interferes but little with respiration, but does impinge upon the inferior turbinated body, causing irritation of this most important physiological structure, and produces a sense of stuffiness of the nose, and may interfere to some extent with drainage of the secretions posteriorly. Where it encroaches upon the respiratory pathway it becomes a very potent factor in retention of the secretions, producing crusts upon the anterior aspect of the ridge, resulting in more or less hemorrhage when crusts become detached by picking or blowing of the nose.

On account of the mechanical irritation of the inferior turbinate and the resultant turgescent and hypertrophic condition which is produced, they should be removed. The most serious deflections, however, are those of the perpendicular plate of the ethmoid bone. Any considerable deflection of this bone will cause pressure on the middle turbinate upon the side of its convexity.

This condition not only obstructs drainage and interferes with ventilation of the superior meatus, the frontal, ethmoidal and sphenoidal sinuses, but defeats one of the important functions of the air current—that of syphoning the mucous out of the sinuses. It is this condition more than any other that causes catarrhal and suppurative inflammation within the sinuses. The secretions are retained, undergo decomposition and lower the resistance of the mucous membrane. Infection and inflammatory reaction naturally follow. Swelling of the mucosa causes partial or complete closure of the ostei of the

sinuses which further interfere with drainage.

Ventilation of the superior meatus and sinuses being interfered with, the oxygen of the air becomes absorbed and rarefaction results. This condition produces an influx of blood to the lining mucous membrane, and catarrhal or purulent inflammation is promoted.

If, in the course of such conditions, active, pus-producing micro-organisms, such as the streptococci, staphylococci, diplococcus, pneumonia, etc., find lodgment there, a suppurative inflammation of the sinuses results. It is apparent that this form of deviation is of great importance, and the indications for its removal are urgent.

The formation of a ridge on the anterior margin of the vomer pressing on the inferior turbinated body, combined with a deflection of the vertical plate of the ethmoid, which may or may not be on the opposite side, impinging on the middle turbinate, makes the indication for surgical interference all the more imperative.

In addition to the deflections and malformations of the nasal septum, we occasionally find hypertrophy of the anterior or posterior end, or even the entire inferior turbinated bone, which may require some surgical measure to reduce it sufficiently to insure proper drainage and ventilation. It is quite a common thing to find an hypertrophic or hyperplastic condition of the anterior third of the middle turbinate, the removal of which at times becomes necessary in addition to the correction of the septal deformity.

If intranasal obstruction has persisted for some time, resulting in destruction of any portion of the mucous membrane exposing a bony surface, especially within the sinuses, polypi may be present; if this is the case, removal of the exposed bony surface by excision or curettment will be clearly indicated.

It is a well recognized fact that many of the catarrhal and suppurative inflammations of the nasal and accessory sinuses are often due, either directly or indirectly, to obstructive malformations of the septum.

Such morbid conditions within the nose and accessory sinuses as (1) acute rhinitis or coryza, (2) chronic turgescent rhinitis, (3) chronic hypertrophic rhinitis, (4) chronic hyperplastic rhinitis, (5) acute sinusitis, catarrhal and suppurative, (6) chronic sinusitis, catarrhal and suppurative, (7) polypoid degeneration of the mucosa of the nose and sinuses, (8) atrophic rhinitis, are either directly or indirectly caused, or their course is often largely influenced by, a pre-existing deviation of the septum, enlarged turbinated bone, or both.

Various operative procedures have been instituted in the past for correcting the different intranasal deformities, but all of them were more or less unsatisfactory and disappointing in results. They required the wearing of a splint from one to two weeks, with considerable pain and discomfort to the patient and discouraging to the operator.

Quite recently a new operation has been perfected by which at least 95 per cent of all nasal obstructions can be successfully corrected, and in most cases giving to the patient a normal functionating nares.

This operation is known as the submucous resection of the septum. I shall not attempt at this time to describe in detail the different steps of this operation, but will briefly state that it consists in first anesthetizing and bleaching the mucous membrane of the septum, after which a vertical incision is made through the mucous membrane on the convex side of the septum one-eighth of an inch anterior to the commencement of the deflection, beginning as near the roof of the nose as possible and extending well out on the floor.

The mucous membrane, perichondrium and periosteum are dissected back a short distance beyond whatever deflection there may be. Starting again at the point of the initial incision, the cartilage is cut through to the mucous membrane of the opposite side, care being taken to avoid cutting through the mucous membrane, else a perforation of the septum may result. While working from the original side, the mucous membrane, perichondrium and periosteum are then dissected from the cartilage and bony portion of the septum of the opposite side back beyond the deflection, after which the deflected portions of the cartilage and bone are best removed by the swivel knife and biting forceps; the two layers of the mucous membrane can then be brought together and each nostril packed lightly with antiseptic gauze to hold them in apposition, and to prevent ballooning or separating, which would allow a blood clot to form between the layers of the mucous membrane, and thus leave the septum so thick that the object of the operation would be defeated.

Packing after an operation should not be too tight, as it will stop all sinus drainage and cause further trouble, nor should the packing be allowed to remain more than twelve hours, and should rarely need repacking, except in case of hemorrhage. Too tight packing, or if allowed to remain too long, may, by its continued pressure, interfere seriously with nutrition to the parts operated on, resulting in sloughing and loss of tissue, and probably defeat the object for which the operation was intended.

The statement which has been made at different times that intranasal deformities are primarily the cause of many functional troubles and organic

lesions has been questioned by some. Believing, as I do, that such deformities do many times produce functional and organic lesions, I shall attempt in a brief way to demonstrate the possibility of such conditions through the lymphatic circulation.

When we consider that the lymphatic circulation, which accompanies the blood stream with its ramifications and anastomoses, is more abundant than it, and that there is scarcely any part of the body where one side is not freely in communication with the corresponding area, or the opposite side, we can readily see that a sinus trouble, a tonsilar trouble of a parotid inflammation on one side is very commonly manifested on the opposite side.

The nasal mucosa is supplied with lymphatic capillaries, while scant and poorly developed in some portions, they are abundant in others—such as the floor of the nose, the inferior and middle turbinate bodies, the inferior and middle fossa, the mucosa of the sinuses, particularly the antrum, ethmoidal and sphenoidal sinuses. This network of capillaries anastomoses over the entire nasal mucosa in two independent territories; the smaller to the olfactory, the larger to the respiratory portion of the nose. Both of these territories have distinct collectors which form an anterior and a posterior trunk. The anterior unites with the vessels of the external nose, where they empty ultimately into the submaxillary and deep cervical glands. The posterior trunk, being the largest, has two pedicles, which are united at the side of the pharynx just posterior to the hard palate, immediately below the eustachian orifice; this appears to be a meeting place in common of the lymphatics of the mucosa of the nasal fossa and sinuses.

Some lymphatics extend into the eustachian tube some distance, while others encircle the orifice, which produces a very rich peritubular network around the meatus, making the unskillful introduction of a catheter somewhat dangerous, resulting oftentimes in salpingitis or middle ear infection.

The lymphatic circulation from this point is in two directions, part of which are directed outward and downward, terminating in the deep superior cervical glands, while part of it passes around the side of the pharynx, becoming tributary to the lateral retropharyngeal gland, and there anastomoses with the deep superior cervical glands. The lymphatic circulation of the nasal cavity then is found to be in two directions; the smaller portion passes toward the external nose, emptying into the facial glands, the greater portion passing posteriorly through the pharyngeal glands.

To summarize: The efferent vessels from the nasal fossa are tributary to the submaxillary retrolateral pharyngeal glands and deep cervical glands. They also anastomose with the superficial cervical, the buccal and the parotid glands.

When we consider that the lymphatic circulatory system is composed of a canal system, which includes the thoracic duct with its branches, the lymph channels and capillaries, the auxiliary apparatus, consisting of the lymph glands and nodes, the four tonsils, the lymphoid tissue of the intestinal and ileocecal region, including Peyer's patches and the spleen, the thymus gland and medullary system of bones—is there any reason to doubt the question of otoinfection from pathological conditions of the nose, accessory sinuses or throat?

The contents of the lymphatic system are chyle-lymph-plasma, resembling blood plasma; lymphocytes and leucocytes. The fluids of the pleura, the cardia, the peritoneum, cerebral and spinal spaces and other cavities of the body are of lymphatic origin. The lymphocytes and leucocytes, for the purpose of defense and lubrication, according to Stohr, penetrate by diapedesis the epithelial layer of the respiratory tract, the alimentary tract and urinary tract.

The lymphatic and its contents represent in animals one-third of the entire body weight. It is worthy of notice that the lymphatic system takes on a retrograde change as age advances, and that it reaches its full formation and is most active at the age of one year. The number of lymph glands in a child exceeds that of the adult.

It has been observed in experimental work upon the alimentary lymph tract that the leucocytes, rather than the lymph plasma, are carriers of foreign substance, including germs. After gaining entrance the foreign bodies are enveloped by the leucocytes, conveying them to the nearnest lymph gland, where they may be retained for a longer or shorter period, finally reaching the thoracic duct, which empties into the general circulation. Here they may be sifted out by the capillaries of the lungs, kidneys, the meninges or bones to produce lesions. Thus an infection of the general blood stream finds entry usually through the lymphatic and venous system, often giving rise to diseases such as endo-carditis, pericarditis, nephritis, appendicitis and rheumatism.

The very close relationship existing between the lymphatics of the nares, pharynx and tonsils has been fully demonstrated by the interesting experiments of V. Lenhardt, of Budapest, by injecting a number of dogs with China red in the nasal mucosa of the turbinate bodies to demonstrate the direction of the lymph stream in general, and to trace the lymphatic connection with the tonsils. From two to seven days after the injection the dogs were killed by chloroform, and on examination of the parts the red inert matter was found to aid very

materially in tracing the lymphatic tracts. His conclusions were that lymphatic channels connect the nasal mucosa directly with the tonsils, his experiments corroborating the assumption on clinical grounds by B. Frankel that the tonsils secondary to operation upon the turbinate bodies is conveyed by the lymphatic connection, and that the infection is not by continuity of tissue nor by way of the blood. Further, that an infection of one side of the nose may be carried to the tonsil of the opposite side. V. Lenhardt found the colored substances within the body of the leucocytes mostly in the deeper portion of the tonsils. The microscopic picture revealed that the leucocytes were migrating toward the surface of the tonsils. Thus we must conclude that the tonsils are many times secondarily infected from acute infection of the nose and accessory sinuses of the naso-pharynx. The lymphatic connections between the naso-pharynx and the tonsils are sufficiently intimate to regard the tonsils as related glands.

It is probable that every inflammation of the musoca induces a swelling, often imperceptible, of the neighboring lymphatic glands, of greater or lesser extent, which, acting as a protecting mechanism, inhibits the development of the germ. To the tonsils, which have the function of a lymphatic gland, may be prescribed a protecting influence against the micro-organisms which are ever present in the mouth and naso-pharynx, acting also as a barrier against their invasion into the trachea and oesophagus. On the other hand, it must be admitted that the tonsils are frequently the seat of primary inflammation, and they they are more susceptible to disease than other membranous structures in this region.

The lymphatics of the lungs and thorax are less developed than those of the pharynx and intestines. The construction is simpler, the leucocytes are fewer in number, and the lymph circulation is also less active. Compared with the pharynx and intestines, the lymphatics of the lungs are less efficient in their defense function. No direct anastomoses exist between the lymphatics of the thorax and those of the head and throat, nor between those of the thorax and abdomen. (Attempts to inject by direct route have failed in animals and upon the cadaver.) However, an indirect route exists between both. The supraclavicular chain of glands form an indirect connection between the neck and chest. It is believed that infection can only be carried from the neck to the thorax by the indirect route, when a suppurating gland causes a reversal of the lymph current, forcing the infectious material through this indirect route, or the suppuration of a gland may produce an erosion of pleura or thoracic duct to produce general infection. Direct connection of lymphatic channels between the pleura and lungs and bronchial glands with the abdominal cavity is unknown. But this indirect means of communication between the cervical and thoracic glands will, I believe, explain the frequency with which we find tubercular involvement of the lungs or pleura, with chronic sinus and tonsilar inflammation, particularly in the young.

DISCUSSION.

Dr. Clifton M. Miller, Richmond, Va.—I have been very much interested in Dr. Wylie's paper. I think that this question of intranasal deformities is a very important and a broad one. I believe that he has laid insufficient stress on the varieties of pain that we meet with in such cases. I find that it is for pain as often as for any other reason that patients present themselves at my office.

I recall a case that I saw in consultation five or six years ago. The patient was one of the most powerful men physically that I am acquainted with. I was summoned by his physician, thinking that he had acute inflammation of the maxillary sinus. When I got there his physician told me that he had had a grain of morphine by the mouth and hypodermically in the previous five hours, the last dose having been half a grain hypodermically an hour and a half before my arrival. There was no inflammation of the maxillary sinus and no pressure in his ethmoid region, but there was a very large septal spur, far back on the septum, pressing on the inferior turbinate. This quantity of morphine had given absolutely no relief. He was in as great pain as before he had taken it. He had contracted an acute rhinitis, which was then in the second stage. Cocaine and adrenalin, locally applied, gave relief within an hour and a half or two hours. In spite of this, he refused to have the spur removed, and he had a second attack, after which he passed out of my hands. I refused to tinker with it any longer.

My experience with these high deflections is along the line of Dr. Manning's and Dr. Dowling's remarks yesterday—that is, that they produce eye symptoms. I have under treatment a girl of fourteen years who had made the rounds of the oculists of my town. Her mother had been told that she was a school shirker because they found a refractive error of one-quarter diopter in one eye and one-half in the other, with absolute muscular balance. They said that she pretended to have headaches because she did not want to work. Her family physician brought her to me with this history, and said: "There must be something wrong. I have been an attendant of the family for years and know that she is an ambitious girl and wants to go to school. At any rate, she wants to read novels, and cannot even do that." I found that a deflection of the perpendicular plate of the ethmoid was causing great congestion and deficiency of drainage. The optic fundi were perfectly normal. Her vision without correcting lenses and with them was the same. I told the mother and the physician the condition that I had found present. She had just arrived at the age of puberty. Her bones were still develop-

ing, and also her sinuses, and I thought that if I could tide her along for a year or a year and a half I should prefer not to do an extensive nasal operation for a while. Adrenalin and persistent drainage kept the congestion down. I gave her the weak correcting lenses that she required, and she can now read for hours with comfort.

I have had a number of such patients in whom the symptoms of pain about the head almost anywhere were due to this matter of deficient intranasal drainage. Another experience that all of us have had is with patients presenting themselves with enlarged tonsils, showing infection. They have probably passed to the age when the adenoids have shrunken and are not offering any obstruction, but a nasal obstruction of some kind is present, particularly a spur interfering with the inferior turbinate. If you remove the spurs, you often do not have to take out the tonsils, although this is sometimes necessary in these cases, as they do not recover without having this done. My experience is that washing out the tonsil-crypts after the removal of the spur will often cause the tonsil to shrink down to normal, so that the patients pass years without any further attacks of tonsilitis and their digestive disturbances improve. I have often met these cases in which it is often possible to avoid needless surgical intervention. I do not like the term "operative interference." I like that of "operative intervention" because I do not think that surgical work is interfering. I believe that we surgeons should sit down on that term of "interference."

I think that a young operator who is a right-handed man will find that in a submucous resection he can operate better from the right-hand side. The resilience of the septum is such that if you do the operation with the instruments indicated by Ballinger you can draw the cartilage into any position you want. He advocates that, particularly in the beginning operations. I find that a great many patients (this is an operative point in the technique of anesthesia) are nervous and high-strung and request a general anesthetic, and I always accede to this request. At the meeting of the American Laryngological, Rhinological and Otological Association, Dr. Mosher, of Boston, and I were sitting on the back bench while the discussion on this was going on. He advocated the use of a general anesthetic because he said that his patients were nervous and required it, but he lost courage because the men were laughing at this view. I give it in my cases, moreover, and in an adult I give one-fourth grain of morphine, 1-150 of atropin and 1-100 of hyoscin-hydrobrom, and use cocaine and adrenalin locally on the septum. Then I proceed as I would for a cocaine operation and give the anesthetic. I have frequently done submucous resection after having the ether withdrawn, and concluded my operation without putting the ether-cone over the head again, having the patient during the final steps of the operation able to look at me. I have them put in a semi-upright position on the folding operating table. In using general anesthesia, this gives me great comfort, and I have had very little trouble in withdrawing the anesthetic in these cases.

Dr. C. B. Wylie. Chattanooga, Tenn.—There are only a few points that I wish to speak of in closing this discussion, and one of these is with regard to submucous work, making the initial incision on the right side. I said that for the reason that nine-tenths of rhinologists are right-handed. In addition to that, Dr. Miller spoke of the flexibility of the septum in the deviated portion. My experience has been that at least 50 per cent of these septa are so dense and hard that the pressure required to straighten them and draw them to the opposite side is so great that the surgeon is liable to lose his sense of touch and not know how hard he is pushing. If your instruments are sharp, you are likely to cut into the cartilage. If the vomer is much developed and the ethmoid plate, far back, is very thin, you will, if you exert much pressure, get into trouble on the opposite side. Therefore I do not think that you can deflect the septum enough.

I did not mention reflexes resulting from nasal deformities. It is a very big field, so I did not take the time to touch on that at all.

BOOK REVIEWS

A MANUAL OF BACTERIOLOGY AND PATHOLOGY FOR NURSES.

By J. C. Roberts, Ph.G., M.D., Oskaloosa, Iowa. W. B. Saunders Company, Philadelphia and London.

Nurses more than any other class of people except surgeons, should thoroughly understand the principles upon which success in asepsis and antisepsis depends.

To accomplish this without an elementary knowledge of bacteriology is an impossibility. The book under consideration is calculated to supply the necessary knowledge along these lines. As far as it goes, which is far enough for its purposes, it seems to be ample and reliable. It can safely be recommended as a text-book for nurse-students. They will always be more confident, competent and efficient for having mastered its contents.

PRACTICE OF MEDICINE.

A Manual for Students and Practitioners. By Hughes Dayton, M.D. Published by Lea & Febiger, New York and Philadelphia.

This is one of the Medical Epitome Series, designed for hasty consultation. In other words, its object is not so much to teach one something as to refresh the memory on points forgotten. As such it is worthy of consideration. It is logical and thorough, and contains the elements of practice in a very condensed form.

THE PREVENTION AND TREATMENT OF DISEASE IN THE TROPICS.

By Edward S. Crispin, M.R.C.S., L.R.C.P. Fellow of the Royal Geographical Society, Etc. Price 50 cents. Lippincott & Co., Philadelphia, 1912.

Every man, whether layman or physician, who contemplates traveling in tropical lands, will find this little book, of less than 100 pages, a valuable possession. It teaches what insects to fear and how to protect oneself from their attack, what to chose in clothing, food, drink and other things, emergency treatments, symptomatology, and indeed all the exceptional matters dependent on tropical environment. If you contemplate such a trip do not fail to order the book to be mailed to you by the publishers.

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Next Meeting, Lexington, Ky., November 18, 19, 20, 1913

EDITORIAL DEPARTMENT

THE RELATIONS OF THE SOUTHERN MEDICAL ASSOCIATION TO STATE MEDICAL ORGANIZATIONS.

A slight misapprehension is sometimes evident regarding the relations of the Southern Medical Association to state and other medical organizations. The truth is that it has no affiliations with any other body, but it entertains the warmest fraternal sympathy and friendship for every ethical medical organization wheresoever situated, but especially with those in the South.

It has never sought or desired connection or affiliation with any other society or association, but it does wish for the fraternal good will of all such and their endorsement of its objects and work.

Its doors are always open to receive as members those of all other ethical medical organizations whose members must first belong to county medical societies.

Thus it depends entirely for its membership upon the county medical societies and they are the only doors through which its rapidly growing strength has come and its marvelous expansion can be maintained. In one way it has sometimes proved a feeder to the county societies themselves, for it has happened that doctors who, for reasons, had failed to join their county organizations, have entered them in order to become eligible to membership in the Southern Medical Association.

That association offers a wider field for study and discussion than any one state society can possibly afford, for its membership is drawn from sixteen Southern states, whose brightest, ablest men delight to attend its meetings and pursue their studies of Southern medical problems among colleagues in their own medical home. Their field of observation, instead of being bounded by the lines of any one state, extends over the entire South. Truths learned by an investigator in Florida may be compared with those presented

by another from North Carolina, or Misssissippi, or Southern Texas, and such wide discussions lead to conclusions of moment. Every Southern doctor should be a member of his county society, regardless of state lines, and should join the Southern Medical Association. He will be welcome and will never regret it.

THE SPECIAL TRAIN.

Attention is once more called to the unique plan whereby a great organization of medical men pays another great organization of medical men the compliment of a visit *en masse*. Arrangements have been made for special trains of Pullman sleepers starting from Southwestern, Southern and Southeastern points to assemble at Louisville bearing members of the Southern Medical Association and their friends.

The trains will be elegant and sumptuous and will form such a procession as the most luxurious travel has never seen. Efforts will be made to procure stop-overs for entire trains at Mammoth Cave long enough to allow visitors to inspect that wonder of the world, and at all the cities of any size through which they pass rest periods will be enjoyed.

The excursion promises to be one of the most successful of its kind ever undertaken. Already physicians from various states are communicating with the Secretary of the Southern Medical Association, Dr. Seale Harris, of Mobile, concerning rates and regulations, and others who contemplate taking the trip should lose no time in notifying him of their intentions and securing reservations.

The Louisville & Nashville Railroad has undertaken to provide all the transportation required, but the affair promises to be so extensive that it will be necessary for them to know well in advance the approximate number for which they must provide cars. It is proposed that these shall be of the latest and most luxurious character, yet the rates will be temptingly moderate. Southern doctors who miss this opportunity to enjoy such a combination of travel, pleasant association, wide observation and profitable discussion of professional subjects will have something to regret for a long time.

Doctor, as soon as you read this write to Dr. Harris and take steps to secure accommodations for yourself and your better half.

RAW VERSUS BOILED SWEET MILK.

Few physicians of wide experience have failed to observe patients who, after drinking fresh sweet milk, unboiled, would vomit long, leathery strings of coagula, to their great relief from gastric oppression. Yet in spite of this the dicta of eminent men have led them to continue its administration in the dietary of the sick and convalescent. Because milk is nature's own food for the young, they failed to realize that the stomachs of different animals were intended to utilize milks of widely divergent characters and qualities.

The milk of no cow is the same to the human stomach as is the milk from the human breast. The recently reported experiments of Joseph Brenneman, M.D., of Chicago, shows conclusively that raw cow's milk is not a proper food for weak digestion, but that after it has been boiled and cooled to about 95 F, it is accepted and assimilated much like "mother's" milk. Too many typhoid patients have been slain by raw milk not to cause regret that the fad has so long persisted. True, many survive it, but why put them to the test when "scalding" and cooling is so easy? No one who reads Dr. Brenneman's article in the A. M. A. Journal of February 22, 1913, can fail to be convinced that raw and boiled milk are two very different articles of diet so far as ease of digestion is concerned.

There should no longer be heaviness of stomach and vomiting of tough curds in the case of typhoid patients, such as has too often heretofore been seen.

The use of fresh sweet milk, boiled and cooled, or of fresh sweet buttermilk, so ably

recommended by the elder Maury in Pepper's System of Medicine, will entirely obviate the trouble.

A EUGENIC FARM.

Farms devoted to the rearing of blooded cattle, Angora goats and such are plentiful, but farms for the production and rearing of human beings from carefully selected and mated men and women, located on lands purchased by the state and provided with the essentials necessary to the success of the enterprise, are something new under the sun, our esteemed predecessor, Solomon, to the contrary notwithstanding. Yet this is what the enterprising spirit that inspires the Senate of California has led that golden state to take into consideration.

A bill has been introduced into that legislative body providing for "the marriage, under the control of the state, of twenty-five selected couples," who shall be maintained on a state farm, where they can rear their offspring under the most favorable conditions. A thousand acres of suitable land is to be purchased at an average rate of $100.00 per acre, including necessary equipment.

It is an ideal proposition. The couples could be selected and mated according to the kind of succeeding generations required, such as for agriculturists, pomologists, physicians, jurists, statesmen (not politicians), and so on.

It would afford wonderful opportunities for exploiting theories hitherto untried. Even in the care of the baby crop there would be bliss for many a childless woman, single, of course, to demonstrate theories of management evolved from inner consciousness, but heartlessly opposed heretofore by senseless, even though experienced, parents.

Suffragettes, socialists, theorists of every stripe could "plant the seeds of the true faith" in the minds of those who, because of their unique position, could not escape notoriety.

Tourists, already a valuable crop for California, would be attracted from afar to witness the amazing experiment, and scientific records would be enriched with new tables showing that "as ye plant so shall ye also reap." Make it twenty-five hundred thousand selected couples, oh, Golden State! Allow only selected pairs to mate within your borders, and the dawn of a better era would brighten skies now leaden with unrighteousness.

ANOTHER STATE ASSUMES CONTROL OF MEDICAL EDUCATION.

The State of South Carolina has assumed control of the property of the "Medical College of South Carolina" and constituted it a State Medical College.

The bill appropriates $10,000 for reorganization and support of the school. It is proposed to make it a Class A school and to equip and maintain it accordingly. This is but another instance of the movement that is rapidly placing the most important of all phases of education, that of medicine, under state university control. The day of the commercial medical college is done.

Public intelligence realizes that human health is too precious to be a matter of financial speculation, and that the duty and privilege of guarding the lives of the people against disease and death should be conferred only upon those whose ability is attested by competent judges under state supervision.

It will not be long ere no medical college independent of university management will remain in existence in this country.

LIBRARY OF SOUTHERN LITERATURE.

Attention is called to a brief review of the above named work on another page. The words of the review are not at all more complimentary than are deserved. A careful survey of the splendid volumes convinces the editor of their immense value to the people of the South, be they young or old.

We do not often mention editorially articles

that are or have been advertised in our pages, but in this instance the supreme merit of the work has caused us to suspend the rule.

STATE SUPPORT OF MEDICAL SCHOOLS.

It is now recognized by all competent authorities on medical education that the cost of imparting the necessary knowledge to a student is far in excess of any fee he can pay added to any ordinary school revenue.

Opponents of state support are apt to decry the necessity for such deep and extensive studies, citing the example of this or that "good old doctor" whose library was only a dozen old text-books and whose laboratory consisted of a test tube and an alcohol lamp.

Those same objectors, by the way, are first to "wire to the city" for a man of modern education to "consult" with the "old doctor" when danger threatens their own family. Also they will find no reasons to deny the necessity of an understanding, by the doctor, of the construction of the organs, of their functions in health and their derangement in disease. Then, too, the effects of exercise, diet and medicines must be understood. No rational objector will deny all these necessities, but they may refuse to accept the statements of those who know best concerning the time, labor and expense requisite for their acquisition. But such prejudices are slowly yielding before the eloquence of demonstration. Already in more than twenty states some way is provided for the support of state medical schools, and the South is sharing in the movement.

Alabama, Arkansas, Georgia, South Carolina, and other Southern states have provided for their university medical schools according to their ability, and the sentiment is growing. Each state feels that it is entitled to as well educated physicians as is any sister state, and it is not asking any other state, institution or agglomeration of money to educate its sons for it.

Its citizens are entitled to just as good medical teaching and treatment as are those of any other state, and they shall have them. This spirit, though unsophisticated, burns in every patriotic breast, however it may be smothered by conventional or erroneous views, and will ultimately result in placing the medical schools of southern universities on the high plane to which the pride and abilities of our people entitle them.

Their laboratories will be better sustained, their libraries and museums expanded and their teachers paid salaries more in consonance with those that similar ability and devotion would command under parallel conditions in any other calling. Meanwhile, the work of enlightenment must proceed until the whole citizenship knows the needs, appreciates the opportunities and determines upon action.

IMPORTANT INFORMATION CONCERNING THE TREATMENT OF MALARIA.

In the department of "correspondence" will be found two communications dealing with matters of great importance to every practicing physician.

One is from Dr. D. L. Harper, of Stonewall, Miss.; the other from Dr. W. M. James, of Ancon Hospital, Canal Zone, who is one of our most valued collaborators, and at our request replies to Dr. Harper's inquiry.

The latter gives the treatment for malarial conditions prevalent in that locality, once a pest hole, now as healthy as any Southern city. The former gives a glimpse of the task a physician in a less public situation has often to meet and conquer, and describes the weapons used. Both are of intense, practical interest.

AN IMPORTANT PATHOLOGICAL SEQUENCE FIRST PUBLICLY DECLARED "STRONGLY PROBABLE" BY A SOUTHERN DOCTOR.

A Southern doctor anticipated the report

which according to the Presse Medicale for January 15, 1913, was made by A. Calmette and C. Guerin at a recent meeting of the Academie des Sciences. At the November meeting of the Southern Medical Association at Jacksonville, Fla., Dr. E. C. Thrash, of Atlanta, Ga., stated that it was strongly probable that the tubercle bacilli reached the lungs and set up infections there only by way of the intestines and lymphatic glands. Dr. Thrash came to this conclusion from clinical and post-mortem work under his own personal observation. In other words, tuberculosis was, first of all, a generalized infection of the lymphatic system, and the localization followed as a secondary result.

This is almost precisely the substance of the announcement made by the celebrated French scientists to the Academie, and considered by all a conclusion of great importance. Attention is called to the modest words of the Southern doctor. Dr. Thrash's article will be found upon another page of this issue. It is clear, concise, convincing, and was presented to the Association two months before the French journal made the announcement.

The incident is another evidence of the rapid strides Southern medicine is making in the remarkable advance that characterizes the present day.

The enterprising physicians of the South, through the agency of the Southern Medical Association and its *Journal,* are rapidly proving to the world the energy, abitily and devotion that will surely place Southern medicine upon the highest plane of efficiency and honor.

CORRESPONDENCE

THE TREATMENT OF MALARIA.

Stonewall, Miss., Feb. 27, 1913.

Editors Journal:

I thoroughly enjoy the Southern Medical Journal, more especially the papers and discussions on malaria, which, in my mind, is by far the most important trouble that we Southern doctors have to deal with.

Now, what I want, and greatly need, is for you or some other good man to give us some reliable information on treatment of malaria to prevent relapses. Malaria has been quite prevalent in our town for the past three years and of a severe and resisting type. I had eight cases of malarial haematuria last season. Our town is well kept, drained, sanitary privies and houses screened. All of this, of course, is the first treatment to consider. Quite a few cases here in my practice after thorough purging and giving thirty grains bisulphate quinine every day for ten days, then a strong anti-malarial tonic, containing two and one-half grains bisulphate of quinine, three times a day with strychnine, iron, arsenic, etc., thirty days. Even then it returns, while the patients are living in screened houses and safe from reinfection. I would greatly appreciate your ideas and treatment of malaria, and especially as to the length of time anti-malarial tonic should be given before latent malaria could be considered established. Trusting that you can give me this information, I am, fraternally yours,

D. L. HARPER.

(The following communication from Dr. W. M. James, one of the leading authorities on malaria, answers the above inquiry.—Editors.)

THE CANAL ZONE TREATMENT OF MALARIA.

Isthmian Canal Commission, Canal Zone,
Ancon Hospital, Ancon, C. 3, March 1, 1913.

Editors Southern Medical Journal:

Replying to your request for certain information as to the treatment of malaria I suggest as follows:

The proper treatment of malaria is that which will not only control and subdue the acute attack, but which will also eliminate recurrences or relapses.

In giving quinine there are two factors to be considered: (1) The solubility and absorbability of the drug; (2) the amount of the drug that is taken up by the patient. It is very plain that to obtain a maximum effect both of these factors must be efficient, and that if one is inefficient the benefits of the other will be lost.

The first need, then, in treating a malarial infection is a soluble drug, which is easily absorbed. The absorbability of the drug is often, but incor-

rectly, thought to be effective if symptoms of cinchonism are observed. This view is incorrect, because cinchonism is much more the result of idiosyncrasy than it is a proof of sufficient absorption. Recent experimental work has demonstrated plainly that quinine in liquid form is far more readily taken up than when given in powder, even in very large doses.

So that when a malarial infection is treated by giving pills, capsules or powders, although the acute symptoms may be controlled, it is well known that this method is not reliable for effecting a permanent cure. This is often because the gastro-intestinal tract, in acute malaria, is congested and otherwise irritated, as shown by symptoms referable to it, and the amount of quinine taken up is not sufficient to eliminate entirely the infection. Further, whatever resistant form of the parasite is responsible for relapse is favored in its development by such treatment.

These facts are so well known in most countries where malaria is endemic and epidemic to a great extent that preparations of liquid quinine are universally used. In private practice it is true that patients often object strenuously to the taste of these preparations, but if the problem of a permanent cure is intelligently presented to them, especially if they have had several relapses, the difficulty of administering quinine in this form can be greatly overcome.

We have no trouble to speak of on the isthmus in the giving of liquid quinine, and one advantage is that the patient does not know the size of the dose given, as he does when he is accustomed to taking pills and powders.

The second consideration is how much of the quinine given is the patient absorbing. This is a very difficult problem, and one that is not entirely worked out as yet. The strain of parasites may be very resistant to quinine, or the quinine, in its passage through the portal system, may be altered in some manner as to lose its potency. Cases are not uncommon in which infections which were very resistant to quinine by the mouth in large doses and in liquid form and in which no gastric-intestinal disturbance could be demonstrated yielded promptly to hypodermic treatment. Here it is not altogether possible, in the light of our present knowledge, to say just why the quinine by mouth was ineffective, and at present one can only speculate, although the fact as such is very obvious. As far as I know there is no definite routine treatment that will answer satisfactorily in all cases of malaria. What will entirely eliminate the infection in one person will be followed by relapse in another. Nor do we know just how soon after the acute symptoms have subsided, and while the quinine is being continued in the original doses, the infection is eliminated from the internal circulation. Under such conditions treatment is somewhat empirical, and that should be followed which in the hands of competent observers has given the best results. It is well known that complicating illnesses, and most especially syphilis, exert a very marked influence in protracting the cure of a malarial infection, and in all cases when the infection is stubborn, a possible complicating cause, such as anemia, acute gastro-intestinal congestion, stasis, constipation, organic disease, tuberculosis or syphilis, should be sought for, and, if found, properly treated. Treatment of the malarial infection alone, in countries where there is much malaria, frequently fails to result in a cure, because very often the malaria is only a complication of some underlying disease. Why, under such conditions, the infection is more difficult to eliminate, is a problem that is well worth the attention of investigators, and to my knowledge no satisfactory answer has as yet been given.

To eliminate relapses, one must have at least some idea as to the cause. Without going into the various hypotheses as to the etiology of relapses it can be said, practically as an axiom, that relapses are in great part due to a form of the parasite resistant against quinine. Whether this form is a gamete, which later, by parthenogenesis, renews the asexual cycle; whether it is the result of conjugation of two young parasites, or whether it is no more than the ordinary asexual parasite which has acquired a resistant to quinine; the important points are: how is this form generated, at what time in the malarial infection does it make its appearance, and what is the best method of eliminating it?

These questions can be answered best by the analysis of the clinical experience of many observers. Practically all agree that the resistant form develops from the asexual cycle in response to the action of the protective forces of the body, and as a result of some methods of giving quinine; It is not found usually until the infection has persisted some time, and the best method of eliminating it is by killing the asexual parasites before the form in question appears.

It is well known that small doses of quinine are a potent factor in bringing about relapses. Larger doses eliminate the parasites from the peripheral blood, but whatever forms remain these are immune against the drug. What is desired, then, is the dose that will quickly eliminate all parasites before any immunity or any immune

forms appear. This can be determined only by clinical experiments.

The use of quinine in small doses, after the disappearance of the acute symptoms, is of no value, because such doses cannot affect the residual parasites, if any such remain which have escaped the action of the larger initial doses, and if they have any action, it is to increase the immunity of these residual parasites. That is why relapses so often and so persistently follow the exhibition of "tonics" which contain small doses of quinine, and occur after systems of treatment in which quinine in small doses is given intermittently. And here I wish to call attention to the most important thought to be kept in mind in the treatment of malaria, that is, if the immune form of the parasite has been generated a relapse will surely follow, after any system of giving quinine.

There are so many methods of giving quinine to eliminate relapses, each of which has its advocates, that it is not possible to consider them all in this place. For this reason I shall present only the one which eight years of daily experience has taught us here is the most effective.

After the preliminary purge (we use three to five grains of calomel, and follow it about twelve hours later by two ounces of 50 per cent sol. of magnesium sulphate) an initial dose of twenty grains of a liquid preparation of the sulphate of quinine is given. This dose is administered shortly after the exhibition of the calomel. The preparation is made by dissolving five grains of the sulphate of quinine in a dram of distilled water with a drop of concentrated hydrochloric acid to the dram. It keeps very well. We then give three doses of fifteen grains each three times a day, or forty-five grains a day, for a week, or for five or six days after the temperature is normal, and then thirty grains a day for another ten days. This treatment, which was instituted here about two years ago by Dr. W. E. Deeks, Chief of Medical Clinic here, has proved very satisfactory in preventing relapses, much more so than the former treatment of ten grains three times a day.

If quinine has not previously been given in small doses, for a time sufficient to cause the production of resistant forms, this treatment will eliminate relapses in almost all cases. If the infection is very severe the dose is increased to fifteen grains four times a day.

When vomiting is present quinine is given in doses of twenty-two and one-half grains, 1.5 grammes, hypodermically. We use a French preparation of the bi-hydrochloride, which comes in ampoules of seven and one-half grains each, and the dose is given well diluted in 20cc. of normal salt solution deep **subcutaneously** with a large hypodermic syringe. We have had almost no abscesses after this treatment, whereas when we used the quinine and urea tablets intramuscularly formerly we had a very large percentage of abscesses. A preparation such as is used here can be obtained from any reliable pharmaceutical house.

Even with this treatment we have had relapses, when there had been insufficient treatment formerly, so that resistant parasites are present. I have lately tried the intravenous method in high dilution, with considerable success in such cases, being influenced by the favorable report given to me by Dr. D. M. Molloy, of the Philippine General Hospital in Manila. Dr. Molloy states that he has employed this method without ill results in many cases of malaria, and has been particularly successful in treating obstinately relapsing cases that did not respond to any other method of medication. I have been using it on European laborers here who are "chronic" cases, coming into the hospital once every six weeks or so, and so far the results have been very satisfactory, and without danger. I use a "606" apparatus, and give the quinine in doses of one to two grammes in 300-500 cc. of normal salt solution. Dr. Molloy has given as much as two grammes every day for three days and then every other day for a week without ill results. I give two doses of 1.5 grammes, and follow with forty-five grains a day by mouth, as above noted.

There is just one thing more to add. Tonics, with arsenic, iron and strychnine, are valuable adjuvants in treating the anemia resulting from malarial infections. But small doses of quinine added to these have no curative value, but rather tend to increase the resistance of whatever form of residual parasites may be present.

W. M. JAMES.

GONORRHOEA IN THE NEGRO.

Hattiesburg, Miss., March 13, 1913.

Southern Medical Journal, Mobile, Ala:

Dear Sir: Noticing in the correspondence column on page 205, March number, a communication from Dr. Wm. A. Steel, of Philadelphia, Pa., in regard to the frequency of gonorrhoea in the negro, and having an experience of thirty-nine years among this race as practitioner of medicine, I will answer his question as to my experience.

Question 1. Is gonorrhoeal urethritis more prevalent among the adult negro male population? Emphatically, yes.

2. Are its sequelae pyosalpynx, pelvic ab-

scesses, etc., more common among the adult female negro population? Yes.

3. Is the proportion of gonorhoeal ophthalmia greater among the negro newborn? Yes.

4. Is the disease more prevalent among the city or the country negro population? More prevalent among the city population.

5. Is the disease as virulent in the colored race? It does not seem so, except in occasional instances.

6. Is chronic gonorrhoea and its sequela—gleet, prostatitis and seminal vesiculitis—more prevalent in the negro male? Yes.

7. Is this condition responsible for the sexual lawlessness mentioned in the previous quotation from the article of Dr. Taylor? I do not believe that it is, but it is just the nature of the brute. These attacks upon defenseless women are made usually by the negroes who are mostly of the idle class and have plenty of time to study about these very things, and concoct their plans. There are exceptions to this rule where it is no doubt due to a sudden impulse caused by circumstances and surroundings.

I. H. C. COOK, M.D.

NON-OPERATIVE TREATMENT OF SOME CASES OF INGUINAL HERNIA.

Meridian, Miss., March 28, 1913.

Editors Journal:

Hoping that those with a surgical palm will not look askance on this communication and call it a fake, I submit same with the promise to retract if I were convinced that all operations for hernia always brought the two expanded muscles in freshened condition and in complete apposition. The plan by which I have cured cases of hernia without operation is as follows: One of the main causes of hernia is constipation. First remove the cause and instruct the patient to wear a truss and see that the hernia is never allowed to descend out of the abdomen. After awhile the truss can be discarded and the patient is instructed to make pressure with his hand over the hernial site every time his bowels act. After a time he can stop using his hand and he will find that he is cured. However, he should keep up the use of his hand so long as there is an inclination in the hernia to return.

J. M. WHITE, M.D.

THERAPEUTICS

BELLADONNA.

Belladonna, sometimes called "deadly nightshade," is an European plant, but it has been cultivated and distributed throughout the civilized world. Both the leaves and the root are official and furnish official preparations. Those from the leaves are most commonly prescribed. All parts of the plant yield its chief alkaloid, atropine. Another alakloid chemically identical with hyoscyamine is present in small amounts, principally in the young roots. The leaves furnish an extract, the dose of which is from one-eighth to one-half grain (0.008 to 0.03 gm.); an ointment containing 10 per cent of the extract, a tincture, dose five to twenty drops (0.3 to 1.2 cc.) and a plaster.

The root affords a fluid extract, dose one to three drops (0.06 to 0.18 cc.), and a limiment for external use only, and containing 5 per cent of camphor. Atropinae sulphas, sulphate of atropine is a white, crystalline powder, readily soluble in water or alcohol. It is very powerful and should be used carefully. Dose from 1-200 to 1-50 of a grain (0.0003 to 0.002 gm.). The effects of belladonna are those of atropine, save as to dosage, and in studying them they will be referred to indiscriminately. Belladonna affects the terminal nerves when locally applied, especially when combined with an alcoholic or oily vehicle. The result is analgesic and antispasmodic. It is readily absorbed from abraded or raw surfaces and from the conjunctiva, and, in sufficient doses, will exhibit constitutional effects, even to a poisonous degree.

In medicinal doses belladonna dries the secretions of the skin and mucous membranes, thus antagonizing pilocarpin absolutely.

The secretions of the bronchial mucous membranes are lessened as is also that of the mammary glands. It accelerates the pulse, deepens the respiration and dilates the capillaries, thereby causing a flushing of the face. It dilates the pupils, rendering them insensible to the stimulation of light, and increases intraocular tension. Belladonna ointment, painted upon the rigid os during childbirth, has caused prompt relaxation. Combined with morphine atropin increases the effect of that drug. It is of great value in the treatment of the night sweats of phthisis. The following formula will generally succeed:

Extracti belladonnae, grains III (0.19 gm.).
Extracti nucis vomicae, grains VI (0.38 gm.).

Zinci sulphatis pulveris, grains III (0.19 gm.).
Extracti gentianae comp., grains XXX.
Misce. fiat capsulae No. 24.
Signa: Dose, one capsule three times a day, after food.

Belladonna, or its congener, hyoscyamus, is a useful addition to any laxative compound. It is credited with causing relaxation of the circular, unstriped fibers of the intestines. In spasmodic or nervous affections of the bladder resulting in incontinence of urine or irritable sphincter, belladonna or its derivatives are very efficient remedies. In any form of poisoning resulting in coldness of the skin or free perspiration atropine is useful. Whenever it is necessary to stop the secretion of milk by the mammary glands the belladonna plaster, shaped to fit the swelling, hemispherical breast, with a central aperture for the nipple, will often cause a cessation of secretion in twenty-four hours.

For the purpose of dilating the pupil of the eye, and of paralyzing its accommodation for ophthalmic purposes, atropine is the typical mydriatic. It is also used in ophthalmic practice for the relief of ocular pain and prevention of adhesions.

It must always be remembered that the drug also increases ocular tension and is therefore inadmissable where there is the least indication of glaucoma. Also several cases of atropine poisoning are recorded where it was absorbed from the eye. In congestive headache, accompanied with cold extremities, it affords prompt relief. In heart failure Potter states that it is extremely useful, having in his own practice saved the lives of those collapsed from ether or chloroform narcosis, "when all other methods of resuscitation had failed." For dilating the pupil the following is recommended:.

Atropinae sulphatis,
Duboisinae sulphatis, aa grain I (0.06 gm.).
Cocainae hydrobromidi, grana V (0.332 gm.).
Acidi borici, grana V (0.32 gm.).
Aquae destillatae, fluiduncia I (30.0 cc.).
Misce. fiat solutionem.
Signa. Mydratic solution. Poison.
One drop in the affected eye is sufficient.

Whenever patients are taking belladonna or any of its derivatives, or using the ointment or plaster, they should be instructed to stop the use of it as soon as decided dryness of the mouth and throat are noticed. By suspending its administration for a few days and then resuming it the results will be more satisfactory than if other management were adopted. In warding off a threatened malarial chill, atropine, hypodermatically administered in doses of 1-100 of a grain (0.0006 gm.), has been successful. It is the direct antagonist and antidote to pilocarpin, and to the form of mushroom poisoning shown by profuse perspiration. To be effectual in the latter it must be given as soon as the symptoms appear.

BOOK REVIEWS.

Library of Southern Literature.

The Martin & Hoyt Company, Publishers, Atlanta, Ga.

It is seldom that the reviewer is at a loss for words to express his approval, or otherwise, of the books submitted for his examination and opinion.

In this instance, however, ordinary expressions of satisfaction and admiration would fail to convey the high appreciation awakened by the library of Southern literature. Within its fifteen splendid volumes it contains the cream of all Southern writing worthy of the name of literature that has appeared during the past three hundred years.

Before the mental vision of its readers it marshals an intellectual pageant which constitutes a panorama of the great minds that made their marks upon their respective generations. The luxurious periods of colonial governors representing their kings, ornamenting their literature with every art at their command, is profusely illustrated by their quaint writings. They portray in rich colors the romantic lives they lived, their intercourse with the Indians, their baronial domains, the beautiful relations of masters and servants, and the perfect glow of that aristocratic pride in family and condition which has not even yet entirely disappeared. The statesmanship that in following years kept the Southern hand firmly holding the helm of government, the eloquence of its statesmen and divines, its histories and romances, all these that pervaded the period immediately before the great civil war are described by the men who lived that of which they wrote. The stern resolve and high patriotism that placed Southern men in the front ranks of every national emergency is reflected in the literature of the respective periods. Finally the literature of the present time is copiously represented showing the important place Southern literature occupies in the ranks of the writers.

All these things and many more call for words of highest praise. The work is a monument to Southern ability and Southern enterprise of which every Southern man and woman should be proud. No Southern gentleman who is rearing children whose privilege it will be to enjoy the physical, intellectual, governmental and financial triumphs of his section can afford to be without this epoch-making work. The publishers will forward descriptive pamphlet on application.

Surgical Operations with Local Anesthesia.

By Arthur E. Hertzler, M.D., Surgeon to the Halstead Hospital, Halstead, Kan., and to the Swedish Hospital, Kansas City, Mo. 205 pages. Price, ——. Surgery Publishing Company, 92 William Street, New York.

There is a place for just such a book in every medical man's library, be he surgeon or general practitioner, for both will have need to consult it, and by observing the technic clearly explained, the general practitioner will perform his minor operations with less pain and danger to the patient and the general surgeon will perform a greater number of serious operations without subjecting his patients to the dangers of a general anesthetic.

It covers the subject of local anesthesia and local anesthetics as only a monograph can, discussing the general principles of local anesthesia, technic of administration, and drugs employed, and starting with the simpler operations familiar to all, leads one step by step to operations which a few years ago were regarded very difficult even under general anesthesia.

A pleasing feature is the style the author has followed of assuming personal responsibility for the technic recommended.

LABORATORY METHODS.

With Special Reference to the Needs of the General Practitioner. By B. G. R. Williams, M.D., and E. G. C. Williams, M.D. With an Introductory by Victor C. Vaughan, M.D., LL.D. 200 Pages. St. Louis: C. V. Mosby Company.

Here, at last, is the book for which the doctors have been waiting, the book which will enable them to make their own laboratory diagnoses. It will relieve them of the mortifying and expensive necessity of sending away their specimens to get some better-posted man to tell them what is the matter with their patients. Every element necessary for successful work is described and illustrated and sample technics prescribed, so that no man with average intelligence can fail to understand and carry out.

It is the book so many doctors in the country villages and towns have been hoping for.

A Treatise on Diseases of the Hair.

By George Thomas Jackson, M.D., Professor of Dermatology in the College of Physicians and Surgeons, Columbia University, and Charles Wood McMurtry, M.D. Illustrated with 109 engravings and ten colored plates. Lea and Febiger, Philadelphia and New York, 1912.

There is, as a rule, no department of desirable knowledge in which the average new graduate in medicine is so densely ignorant as that which treats of diseases of the scalp and hair. On the other hand there are few conditions not actually menacing the general health which the average man or woman would pay more cheerfully and liberally to have corrected than the premature bleaching or loss of the hair. Generally the doctors have been so unsuccessful in their rare efforts in this direction that the field is triumphantly occupied by the advertising quacks, some of whom poison the patients with lead.

This book aims to correct the situation, and does it. Doctor, do you know how to treat alopecia, dandruff, sycosis and all the long list of annoying conditions? If not, order this book and study its illustrations and 360 pages and you will be thoroughly posted.

SOUTHERN MEDICAL NEWS

ALABAMA.

Dr. Charles A. Mohr, of the School of Medicine of the University of Alabama, at Mobile, is delivering lectures to the public on the subject of private sanitation.

The $50,000 hospital to be built at Mobile for the care of city patients and the benefit of the medical college has reached a practical stage, namely, the money is ready. As soon as the city architect and the college authorities can agree on plans digging will begin.

On March 5th the Clarke County Medical Society had an enthusiastic meeting at the county seat, Jackson. Resolutions were introduced and adopted endorsing the Southern Medical Journal and its policy.

ALABAMA.

D. A. E. Thayer, of the School of Medicine of the University of Alabama, situated at Mobile, has been delivering a course of lectures to the public in the Y. M. C. A. auditorium. His subject is broadly covered by the term "Eugenics." They are well attended by the most thoughtful people in the city.

Dr. A. Richard Bliss, professor of chemistry and pharmacology in the Birmingham Medical College, with a delegation of eleven members from the college, went to Memphis, Tenn., on February 20th, to install chapters of the Kappa Psi Fraternity in the medical department of the University of Tennessee and in the Memphis Hospital Medical College.

Dr. W. A. Burns has been elected county convict physician by the Jefferson County Board of Revenue, at a salary not to exceed $50 a month.

An Alabama section of the American Chemical Society has been organized at the Birmingham Medical College by prominent chemists from all parts of the State.

The annual report of Dr. W. W. Dinsmore, of the State Hookworm Commission, has been issued. It is the condensed record of a great and good work conducted by a man of unusual energy and ability.

TENNESSEE.

The Business Men's Club of Memphis has sent Dr. F. F. Friedmann a warm invitation to come to Memphis. They promise him every facility for the further testing of his serum. A fund, headed by T. H. Milliken with $1,000 has been started to serve as an incentive.

Dr. Mack Rogers, of Birmingham, has been visiting New York to visit the hospitals.

Of 568 persons examined for hookworm in Roane County, 227 were infected.

In March Jackson quarantined against Madison County workhouse for meningitis.

Dr. Herbert T. Brooks is now dean of the Medical Department of the University of Tennessee at Memphis, vice Dr. E. C. Ellett, resigned.

VIRGINIA.

On the 5th of March eighty-seven new cases of measles were reported at Richmond. Over one hundred placards concerning previous cases had just been removed from houses disinfected and released. Total number of cases to that date, 4,187. Deaths only 13.

The Berkeley County Court has ordered that the compulsory vaccination law be enforced. No one is excused unless previously protected by successful vaccination or in improper physical condition.

Dr. C. C. Hudson, health inspector for Richmond, has resigned his position to assume one of more importance at Danville.

Newport News reports through its city health officer, Dr. T. J. Pretlow, the remarkably low death rate for February of 11.19 per 1,000 inhabitants per annum.

Wheeling allows no herds or stables within city limits unless they are kept in the best sanitary condition. They also require all tin cans to be removed and all garbage to be wrapped in paper for disposal.

ARKANSAS.

Acting Governor W. K. Oldham has appointed a board of six examiners for licensing trained nurses. The board meets once every six months. The fee for examination is $5.00.

On the 10th of March at Pine Bluff the Florence Sanitarium was damaged by fire. It was quickly extinguished and so quietly was the work done that the patients in the sanitarium were unaware that anything was wrong.

In Jackson County forty-five people who had been exposed to meningitis received the vaccination treatment. None of them developed the disease.

Meningitis is said to have broken out at Scott's Station and Governor Robinson has sent Dr. Morgan Smith, Secretary of the State Board of Health, to the point where it is said to have developed, with orders to report to him.

The State Board of Health declares itself helpless for service unless the Senate makes some financial appropriation for its support.

At Bentonville Dr. E. J. Emmons has entered damage suits against Dr. Kennet B. Huffman of Bentonville, and Dr. George A. Hughes of Gravette for having caused his arrest on the charge of breaking quarantine regulations, of which he was acquitted.

Two deaths from spinal meningitis at Salem on the 5th of March caused a veritable panic. Circuit Court was adjourned and the high school closed.

The annual meeting of the Arkansas State Medical Society will be held at Little Rock May 20-23.

A telegram from New York from Dr. Robinson Bosworth, superintendent of the Tuberculosis Sanatorium at Boonville, announces that a patient of that institution, Mr. Lawrence Gates of Little Rock, had been treated in private by Dr. Friedmann with his tuberculosis cure.

NORTH CAROLINA.

The annual meeting of the Southern section of the American Laryngological, Rhinological and Otological Society was held in Charlotte on Saturday, March 8th. Eminent men from all over the country were present.

Dr. Albert Root, medical examiner of the Raleigh public schools, is busily engaged examining the pupils. At last accounts he had examined between 1,500 and 2,000, and was still hard at work.

SOUTH CAROLINA.

Dr. J. M. Richardson, an old and beloved physician of Anderson, suffered a stroke of paralysis March 8th. His age is over sixty.

The Legislature recently appropriated $10,000 for the erection and equipment of a new medical college building at Charleston.

GEORGIA.

An investigation begun at Waycross leads to a suspicion that some of the white physicians of that town have been guilty of violation of the

State drug law, which forbids repeated prescriptions for cocaine for the same person.

Dr. Tuley, a distinguished physician of Louisville, Ky., will give a public lecture under the direction of the Fulton Medical Association. The subject will be "Pure Milk and the Part That Milk Plays in the Health of a Community."

In Atlanta the doctors have arranged a course of lectures for the benefit of parents. The subject for one lecture will be "The Care of the Child; the Nervous System and Early Training; Food, Exercise and Sleep."

Dr. W. C. Bryant of Atlanta introduced resolutions before the Ninth District Medical Society, at Gainsville, March 19th, looking to the enactment of a State law compelling the compilation of vital statistics and providing for county boards of health and county sanitariums for the treatment of persons afflicted with contagious diseases. It is said that Governor Brown favors this plan.

FLORIDA.

The State Board of Health is making a strong effort to educate the people and local authorities in the matter of hydrophobia. The only way to control it is to arouse such a strong public sentiment that the authorities will be forced to do their duty. In 1912 there were 114 with four deaths, all of which could have been prevented by proper and well-known precautions.

The physicians of Jacksonville will be pleased to learn that Dr. William T. Elmore, so long a resident of that city, but who has been spending the last few months in search of health in another State, has succeeded in regaining his former strength and vigor. He writes the Journal that he is now assistant resident on the tuberculosis side of Essex County Isolation Hospital, at Belleville, N. J. He desires our numbers that he has missed and current issues sent to him at that address and expresses high appreciation of the Southern doctor's own medical journal.

KENTUCKY.

The Louisville Board of Public Safety began vaccinating the policemen on March 8th against small pox. Sixty-five men were vaccinated before noon.

On March 7th, after being free for ten days from meningitis, two new cases developed at Maysville. They were school children and all the rooms of the school building were fumigated.

At Hopkinsville on March 9th the well-known physician, Dr. John D. Clardy, was paralyzed on his right side as a result of a fall from his horse. He is 84 years of age.

Another case of cerebro-spinal meningitis developed at noon on March 10th at Maysville. The patient was a boy, aged 8 years, and died at 8:30 p. m. the same evening.

At Paducah Dr. C. P. Burnett, local registrar of vital statistics, speaks of forwarding to the State officer who is in charge of such matters the names of physicians and midwives who during the past two years have failed to report births as required by law. The penalty is a fine of from $10 to $50 for each violation.

Dr. E. S. Stuart, a retired physician of Fairview, aged 84, has given $25,000 cash for the immediate erection of a hospital in Hopkinsville. It is a memorial to his aged wife who died recently and to whom he was beautifully devoted.

Dr. J. N. McCormack, Secretary of the State Board of Health, was at Maysville March 14th studying the cerebro-spinal meningitis situation. He concluded that everything possible had been done to stamp out the disease and that it seemed to be well under control.

Dr. C. G. Warner, city meat, milk and live stock inspector for Paducah, has announced that no milk may be sold from any dairy where the cows have not undergone the tuberculin test, which is administered without charge.

LOUISIANA.

Mr. C. Harrison Parker, President of the Penitentiary Board, has refused to allow Dr. Dowling or his agents to inspect the penitentiary. A wordy war is in progress between the gentlemen and the newspaper reporters rejoice. Dr. Dowling will now clean up the Louisiana penitentiary, as he has everything else in that State.

The Shreveport Board of Health has passed an ordinance ordering the screening of water receptacles and the oiling of ponds. They also direct that business houses shall use fly traps.

Dr. Chandler, President of the Shreveport Board of Health, has preferred charges against George Epple, Commissioner of Streets and Parks, "for not removing a nuisance on McNeil Street after due notice."

On Tuesday, March 11th, a prominent New Orleans physician, Dr. William R. Mandeville, was arrested by a federal deputy marshal on the charge of violating section 211 of the federal criminal code, relative to using the mails to give information about malpractice. The arrest caused a great sensation.

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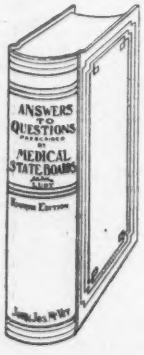

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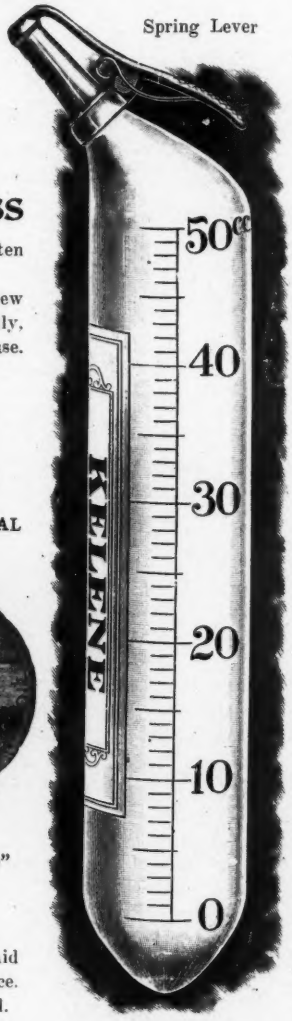

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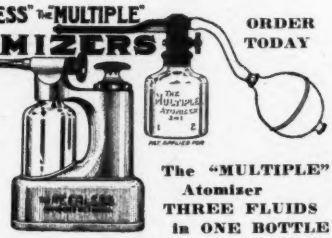

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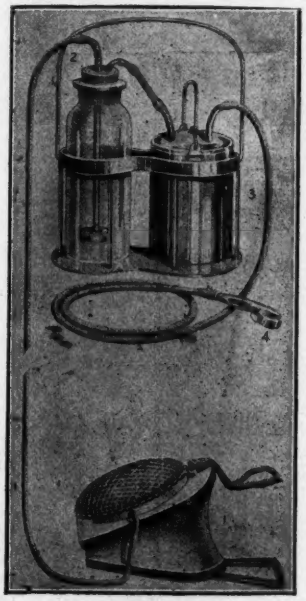

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